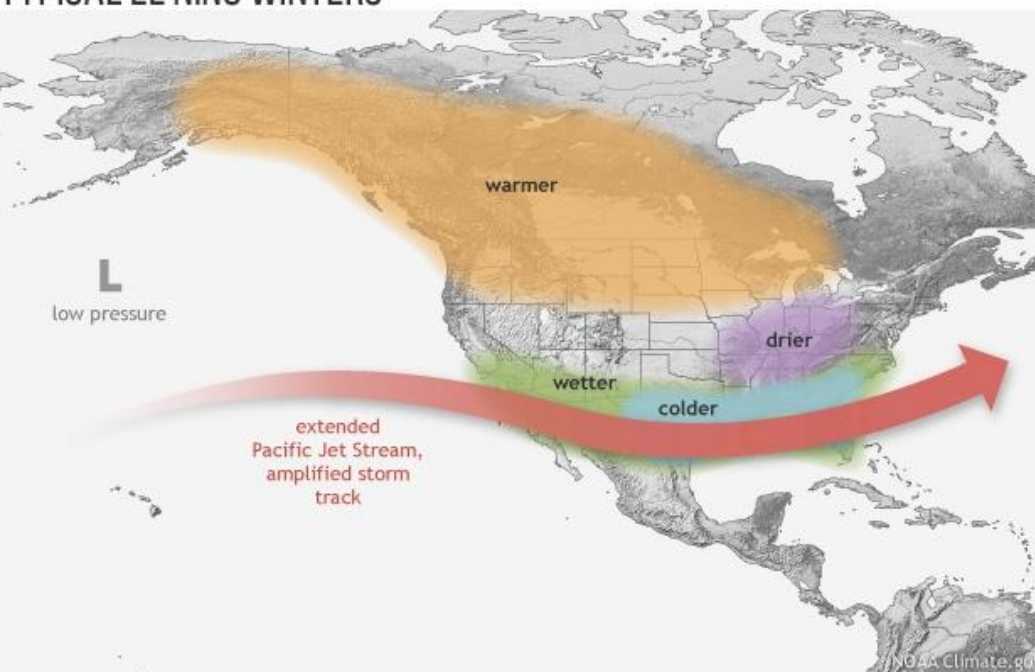


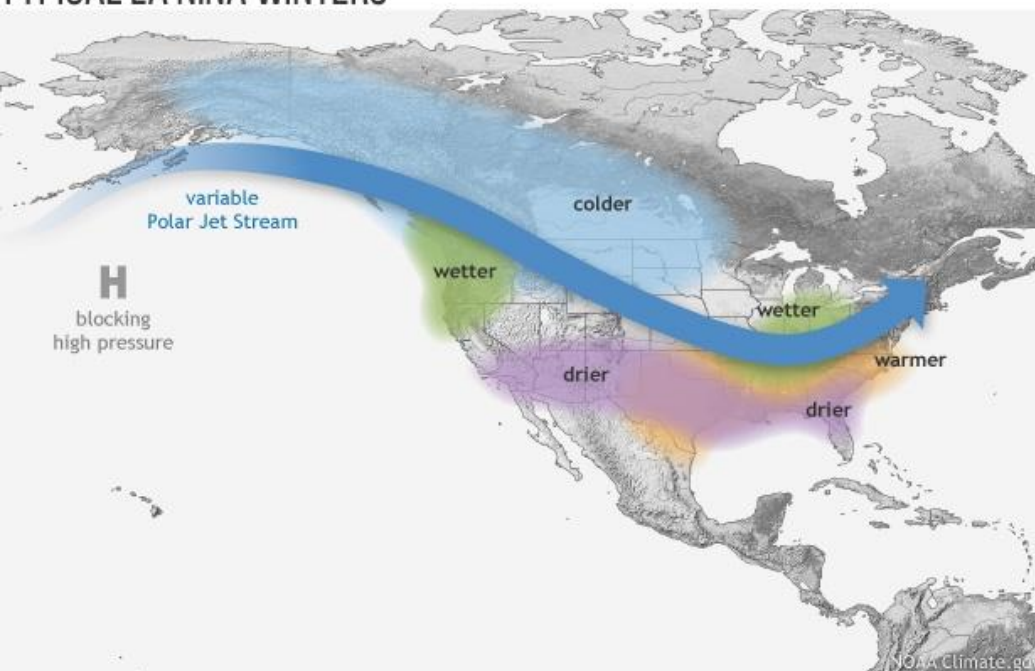


Local Influences of an El Nino or La Nina during the Winter

TYPICAL EL NIÑO WINTERS



TYPICAL LA NIÑA WINTERS

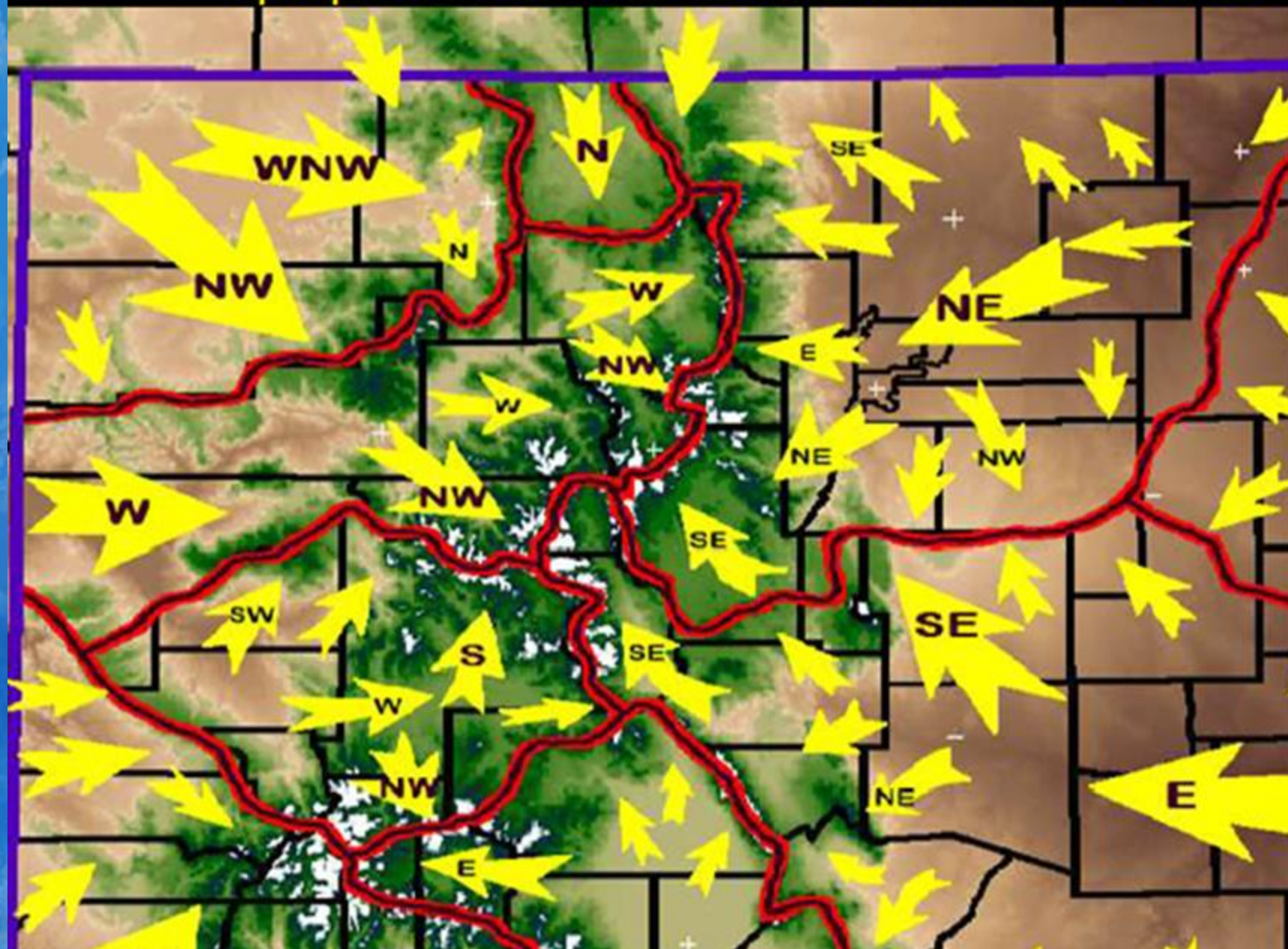


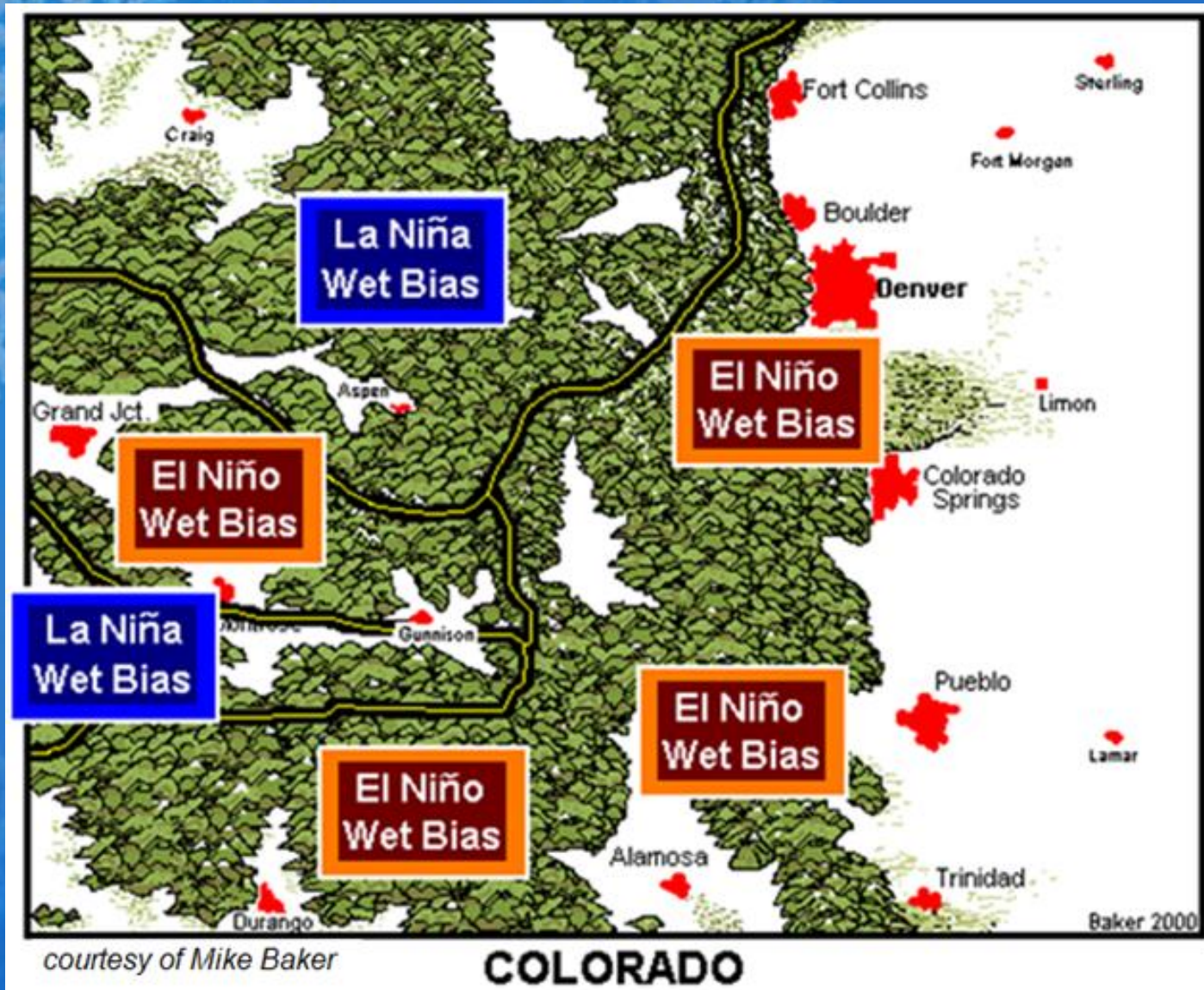
- El Niño and La Niña are opposite phases of a natural climate pattern across the tropical Pacific Ocean that swings back and forth every 3-7 years on average. El Niño and La Niña alternately warm and cool large areas of the tropical Pacific—the world's largest ocean—which significantly influences where and how much it rains there.

- The arrival of El Niño or La Niña in the tropical Pacific Ocean triggers a cascade of changes in tropical rainfall and wind patterns that echo around the globe. For the United States, the most significant impact is a shift in the path of the mid-latitude jet streams. These swift, high-level winds play a major role in separating warm and cool air masses and steering storms from the Pacific across the U.S.

- The maps to the left illustrate the typical impacts of El Niño and La Niña on U.S. winter weather.

Upslope Flow Patterns at various locations across Colorado

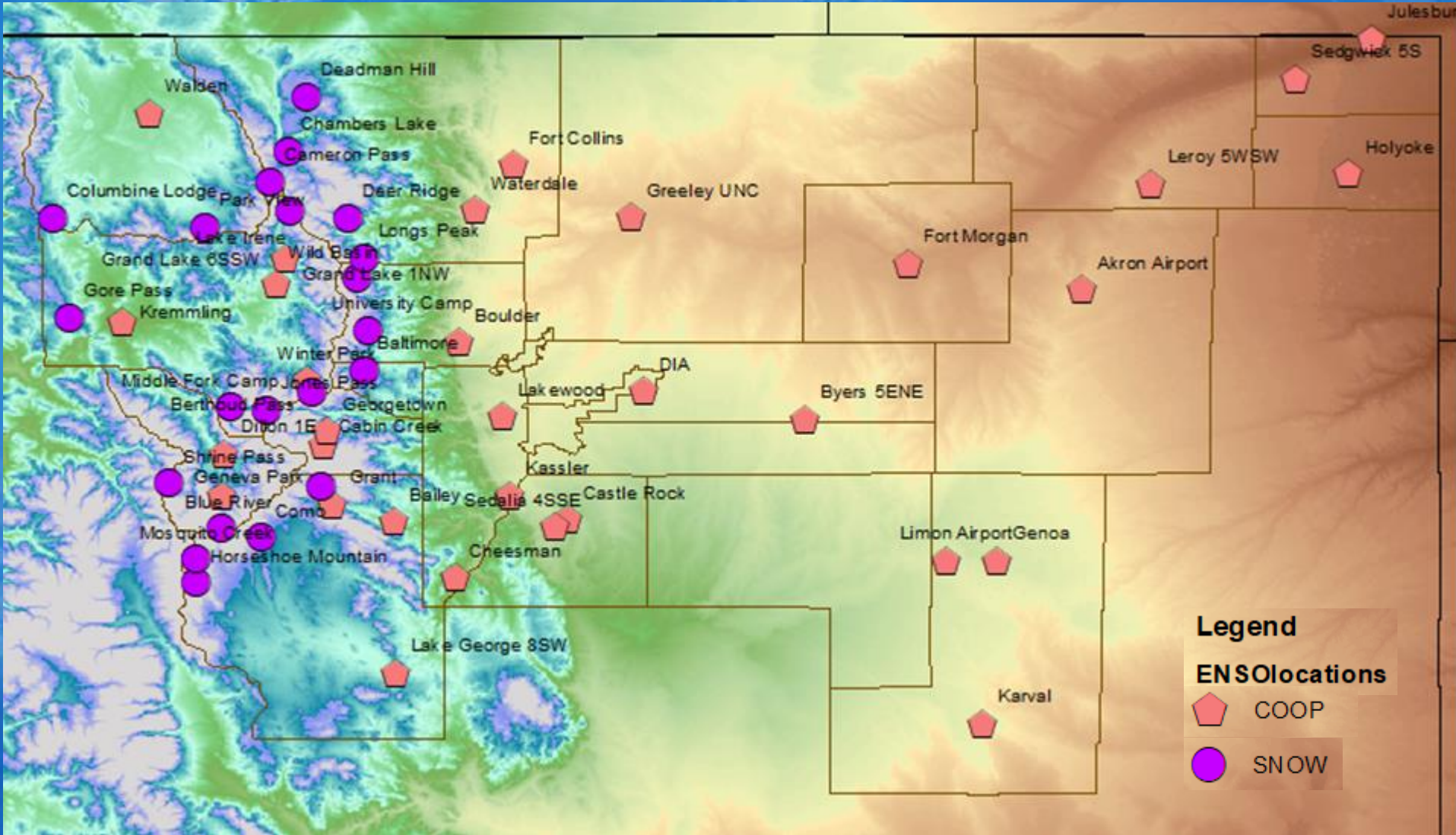




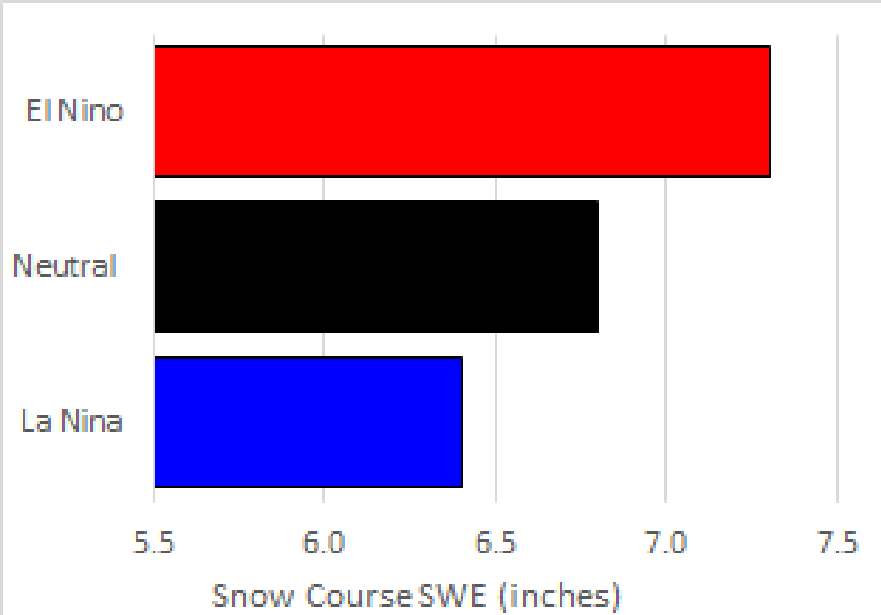
The northerly and westerly upslope flow areas favor a La Nina wet bias. The La Nina impacts may 'spill over' the Continental Divide into the high country of Larimer & Boulder Counties in particular. Lower elevations favor an El Nino wet bias.

How Can ENSO Conditions Potentially Impact Winter Precipitation/Snowpack in North Central & Northeast CO

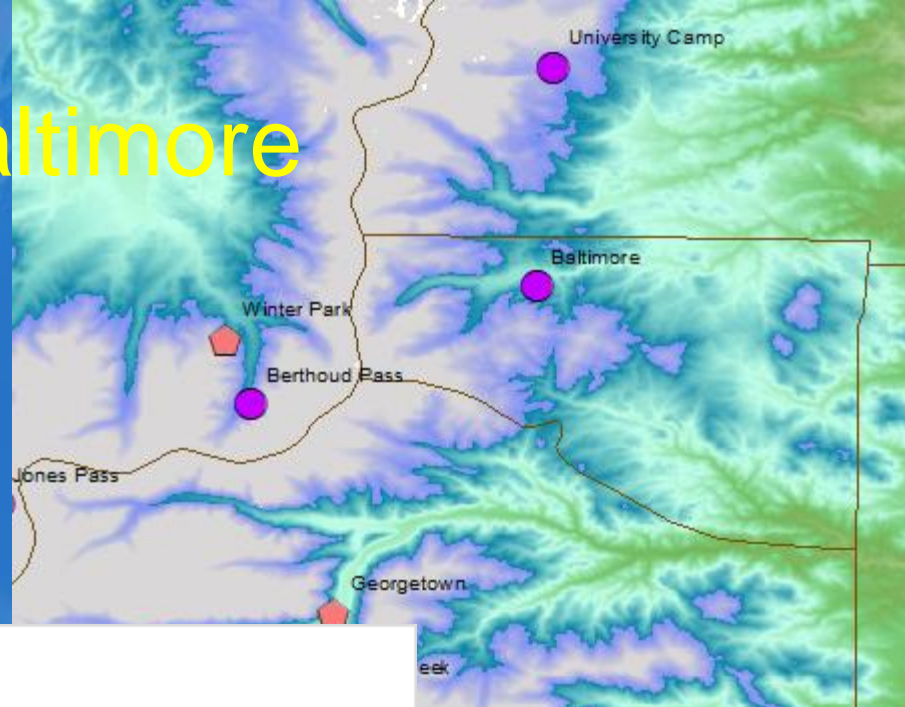
- The previous slide shows the winter influences of a moderate or strong El Nino and La Nina well. The remainder of the slides below are each only for one location in an attempt to determine if there is much of a correlation between precipitation and ENSO climate patterns at various locations.
- Graphs immediately below show the snowpack SWE in the spring at NRCS snow course sites split into El Nina, La Nina, and neutral ENSO events.
- Graphs later show October 15 through April 15th precipitation totals at Airport and NWS Cooperative Observer sites split into El Nino, La Nina, and neutral ENSO events.
- Only winters where the El Nino, La Nina, or neutral ENSO prevailed from the fall into the next spring were included.
- Did not differentiate between a weak, moderate or strong El Nino/La Nina on the graphs. The stronger the El Nino/La Nina ends up being, the higher chances of the ENSO conditions being a significant influence on the weather pattern. If the El Nino/La Nina is weaker, there are more opportunities for other factors to influence it.
- Unsure if the trends on the graphs are helpful?
- A lot of year to year variability on the trend graphs for most locations.
- Weak correlation. Results appear mixed at best for many locations.



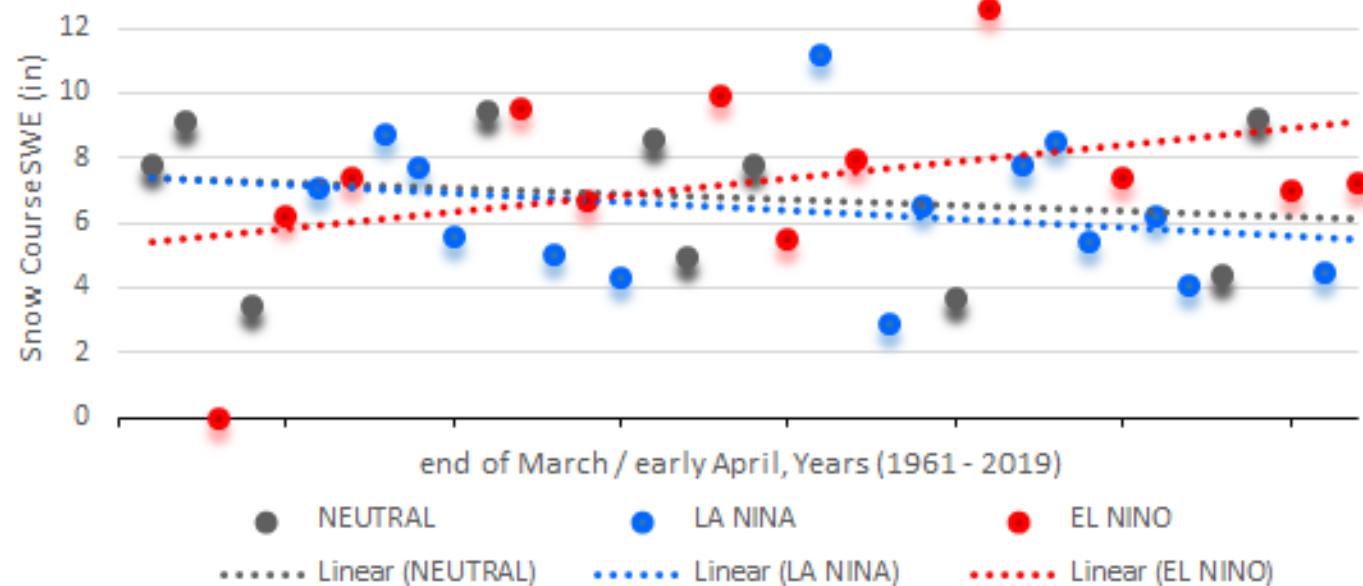
Snow Course Site Snowpack SWE:
(snow water equivalent, data courtesy of the NRCS)

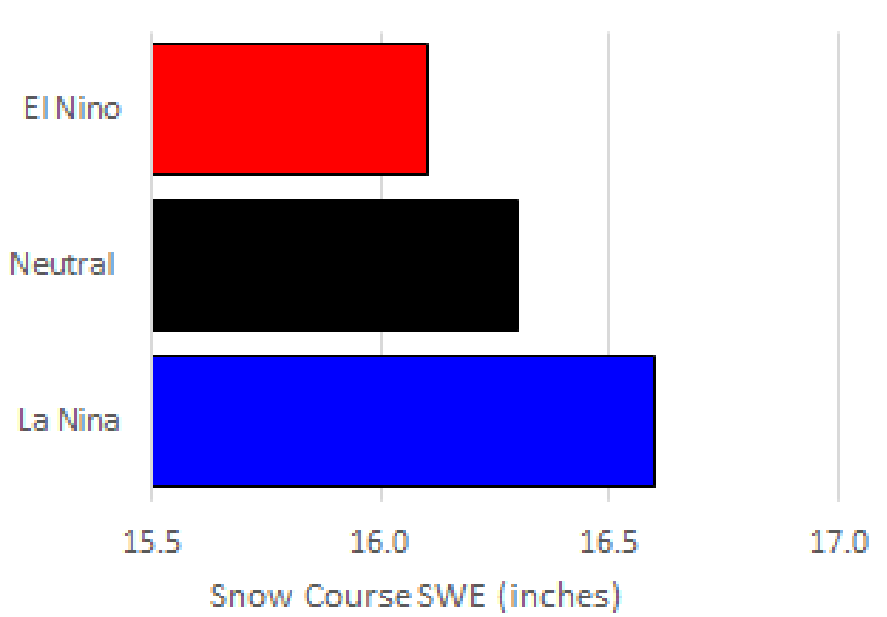


Baltimore

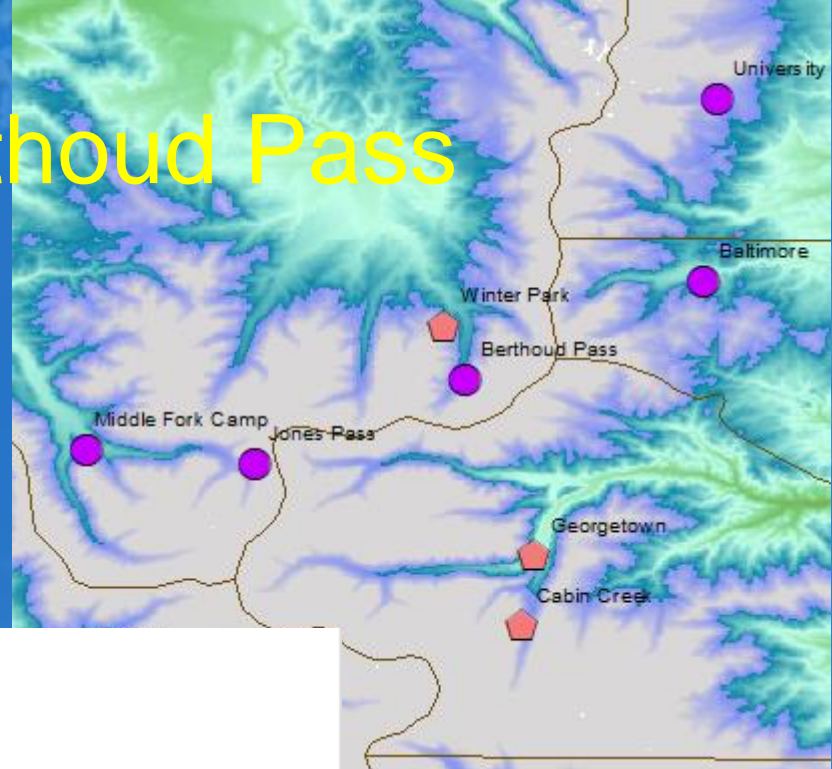


Baltimore - 8800 ft MSL
Gilpin County - 4WSW Rollinsville (South Boulder Creek)

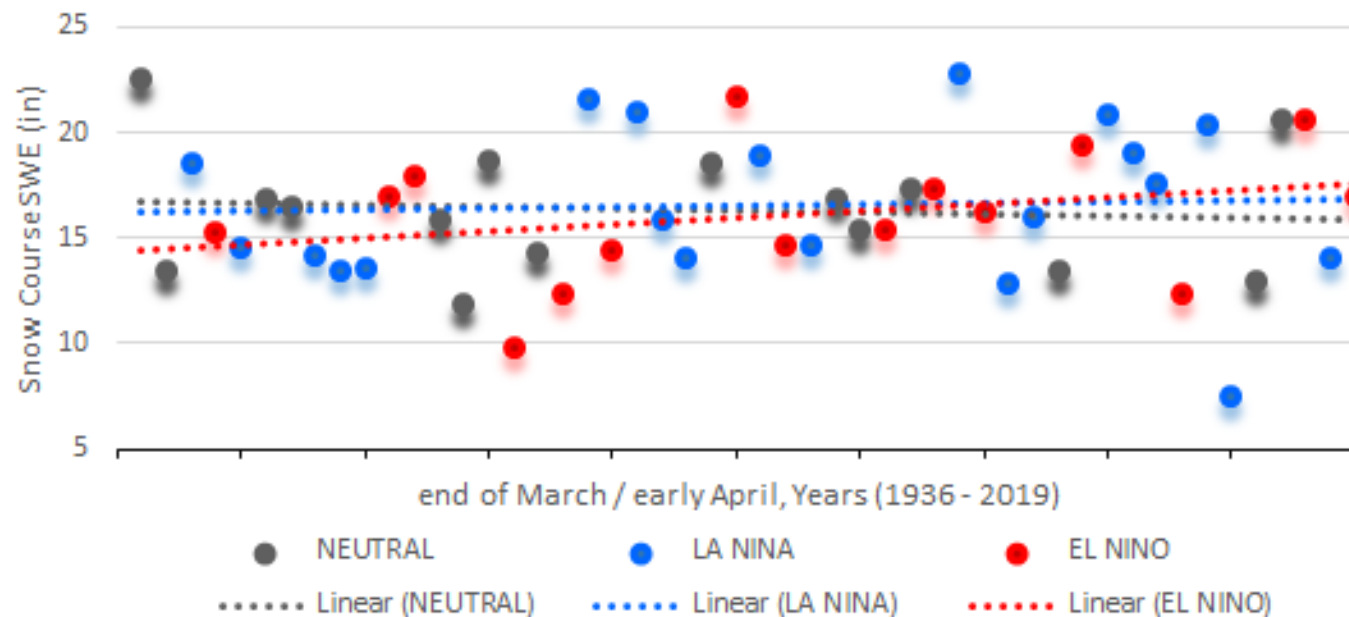


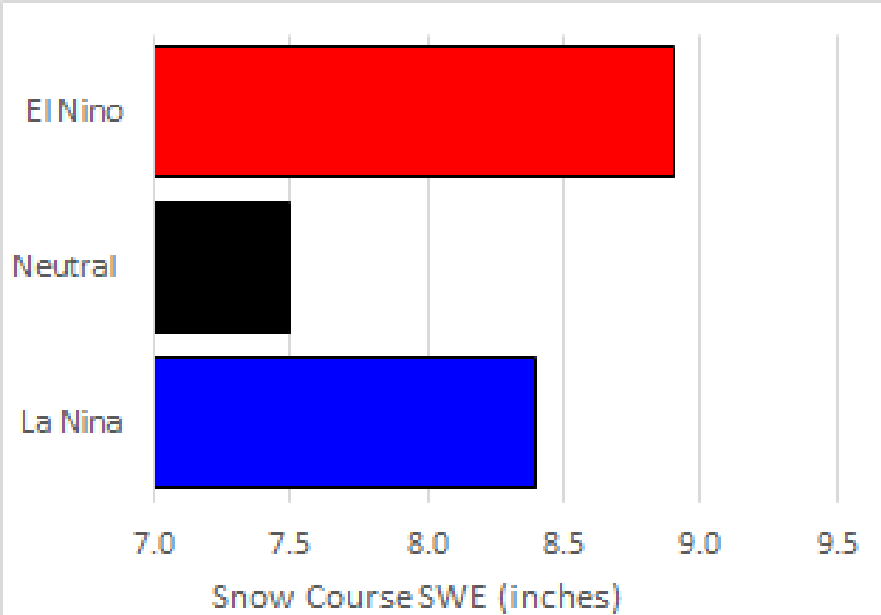


Berthoud Pass

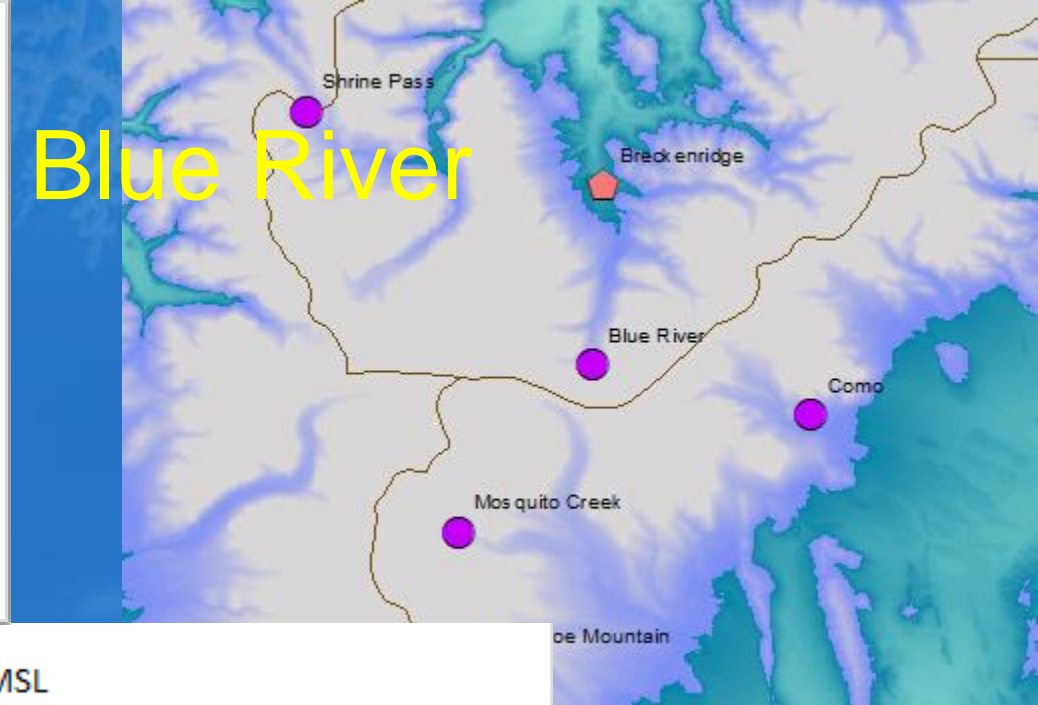


Berthoud Pass - 9700 ft MSL
Grand County

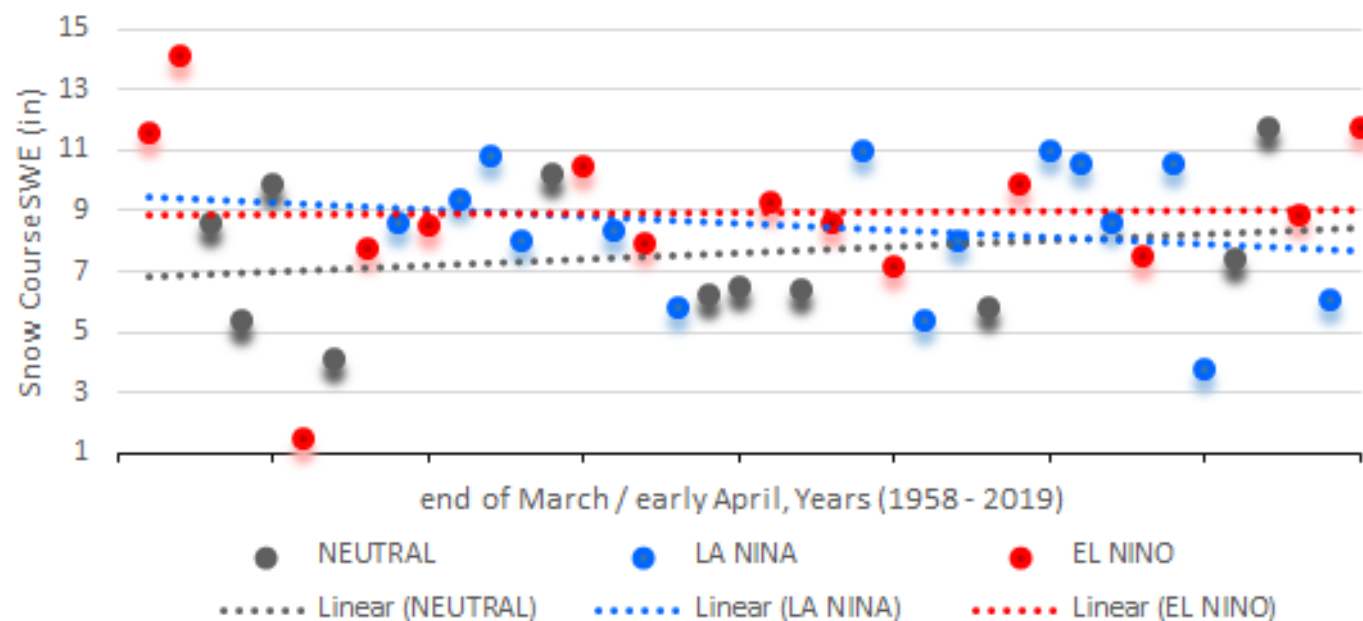




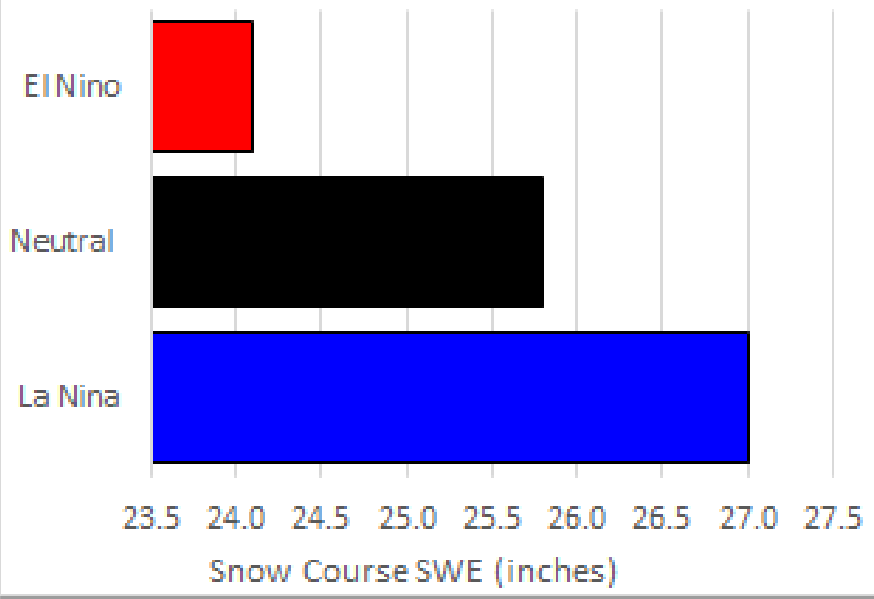
Blue River



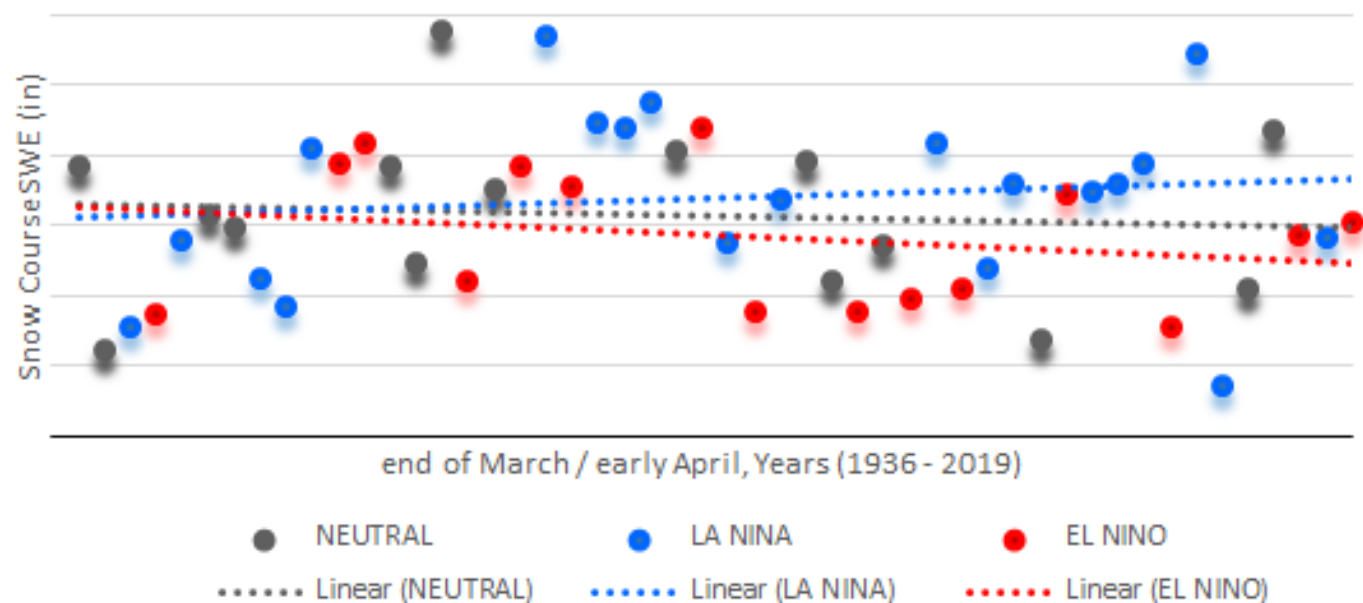
Blue River - 10500 ft MSL
Summit County - 4NNE Blue River



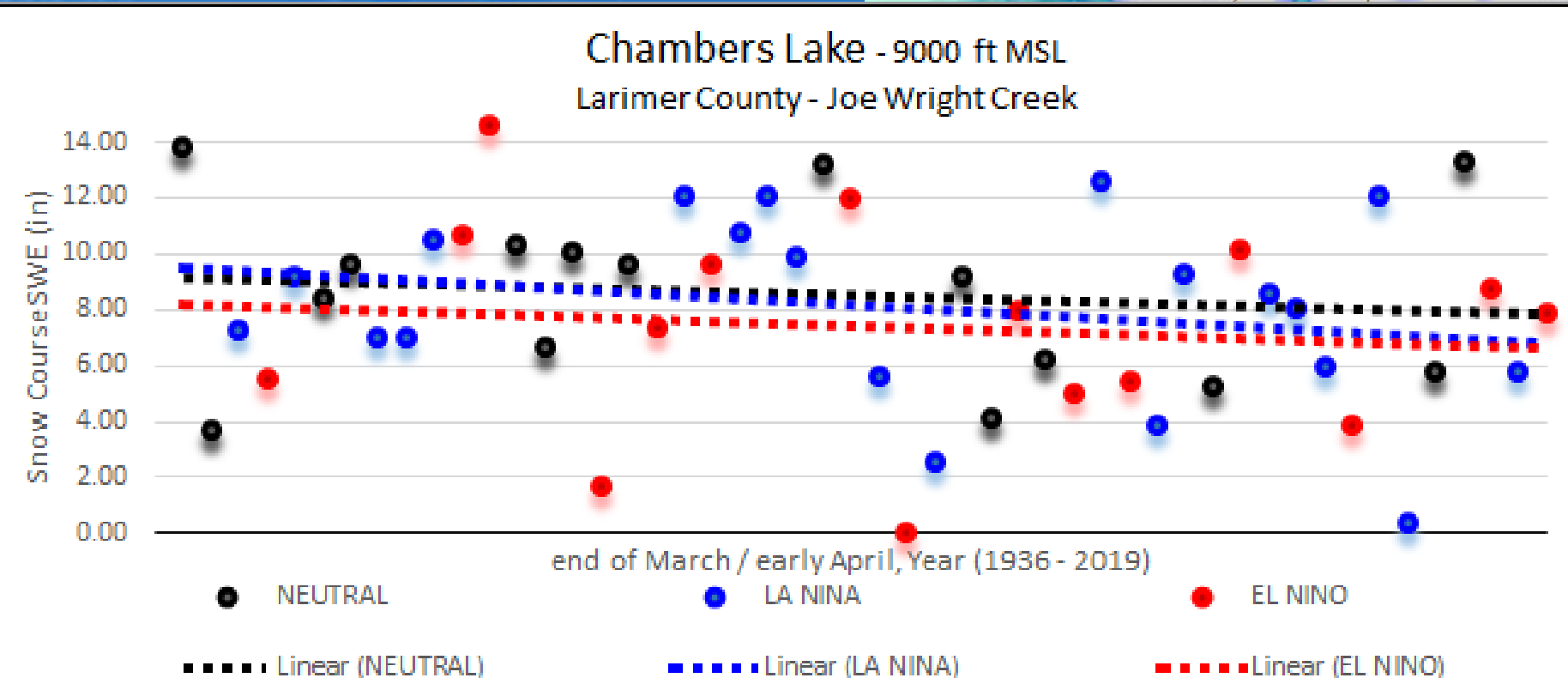
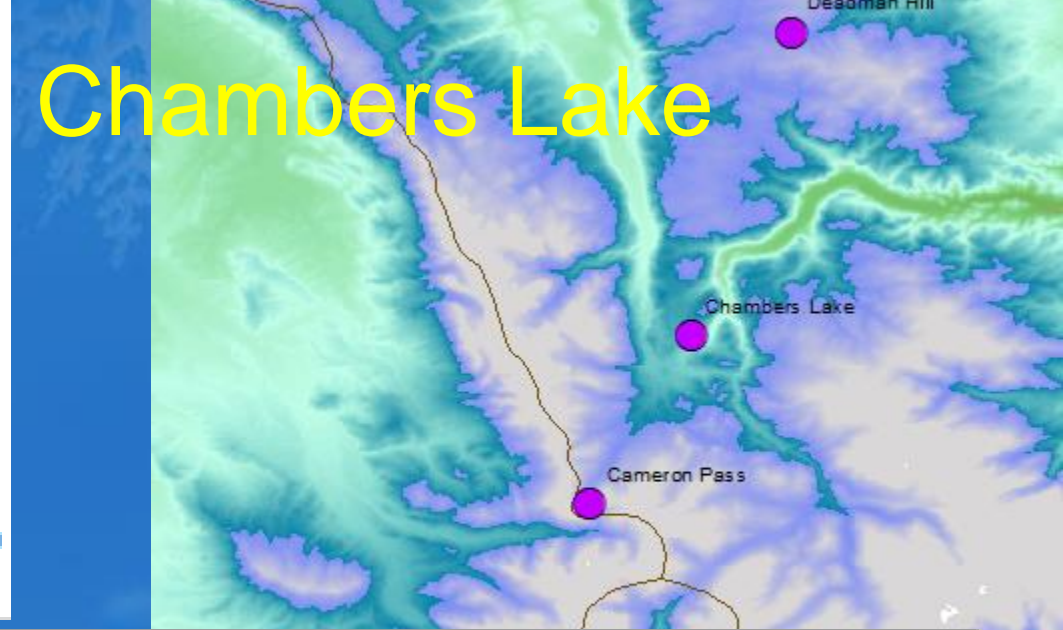
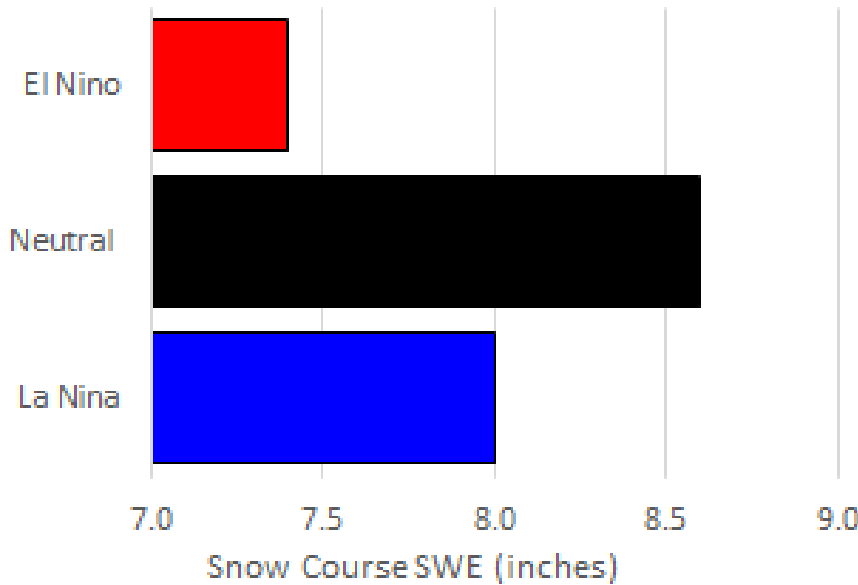
Cameron Pass

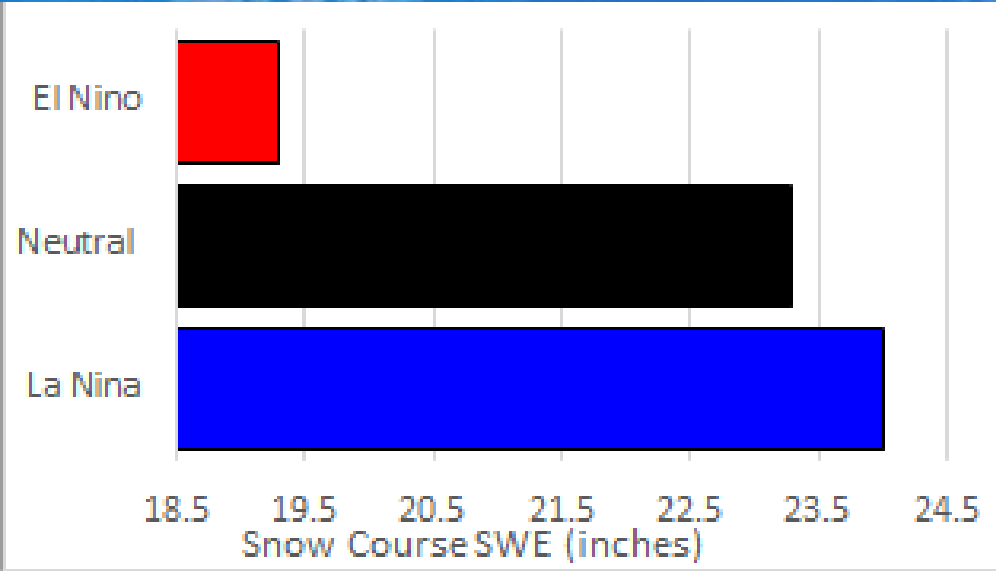


Cameron Pass - 10285 ft MSL
Jackson County

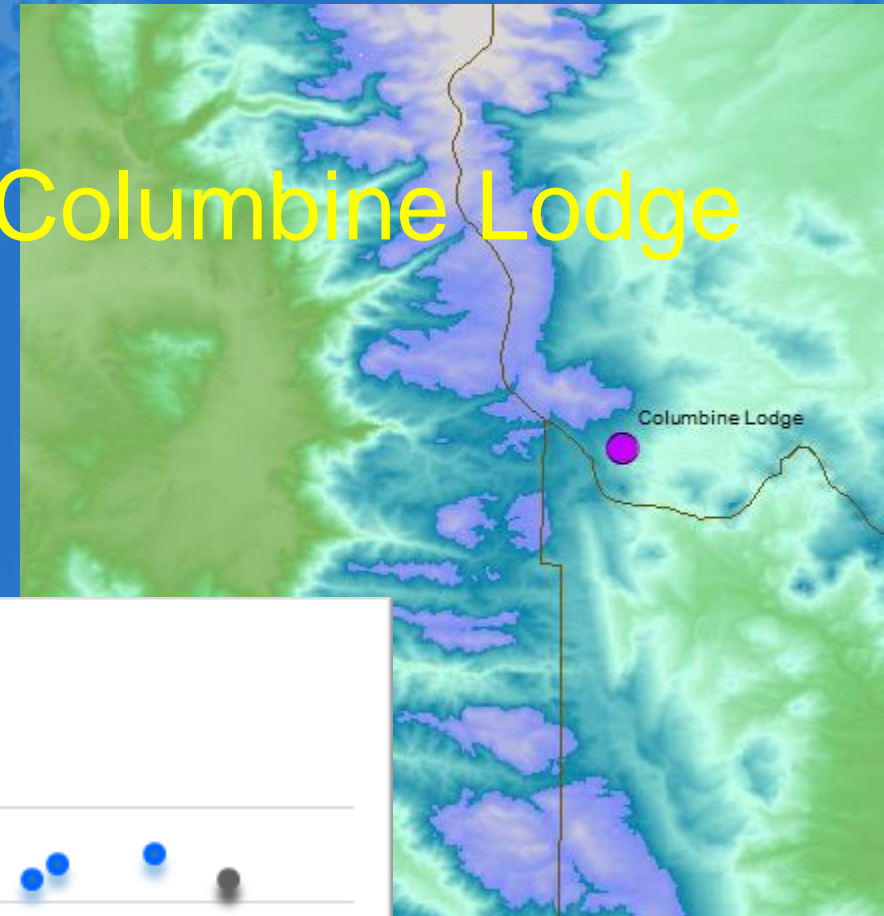


Chambers Lake

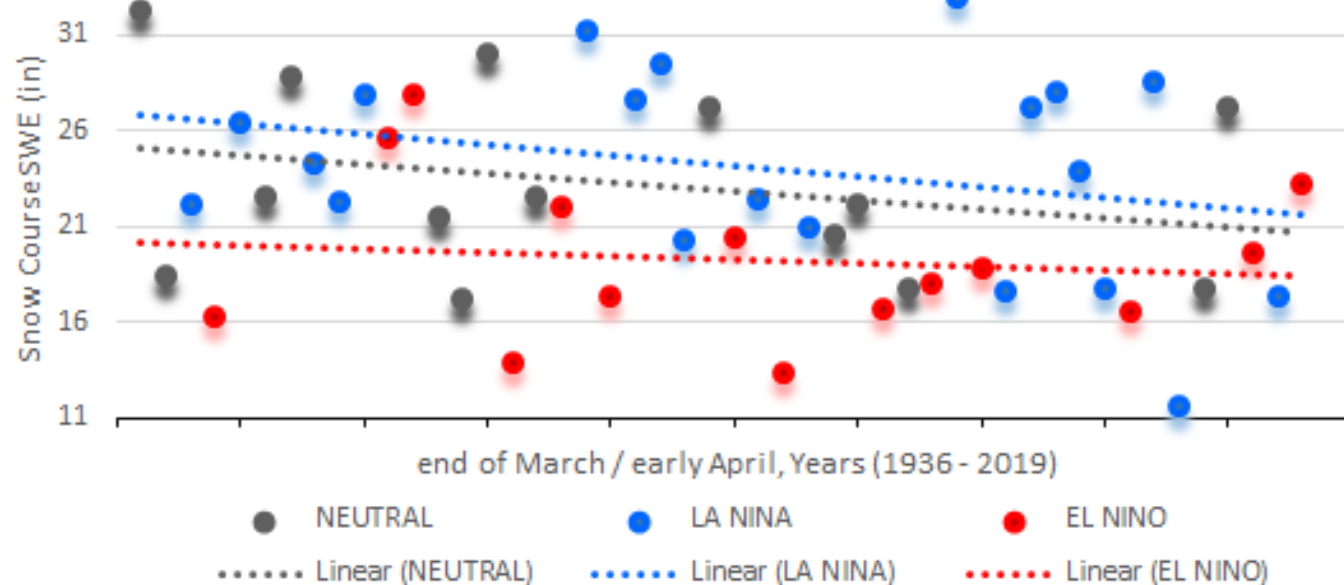


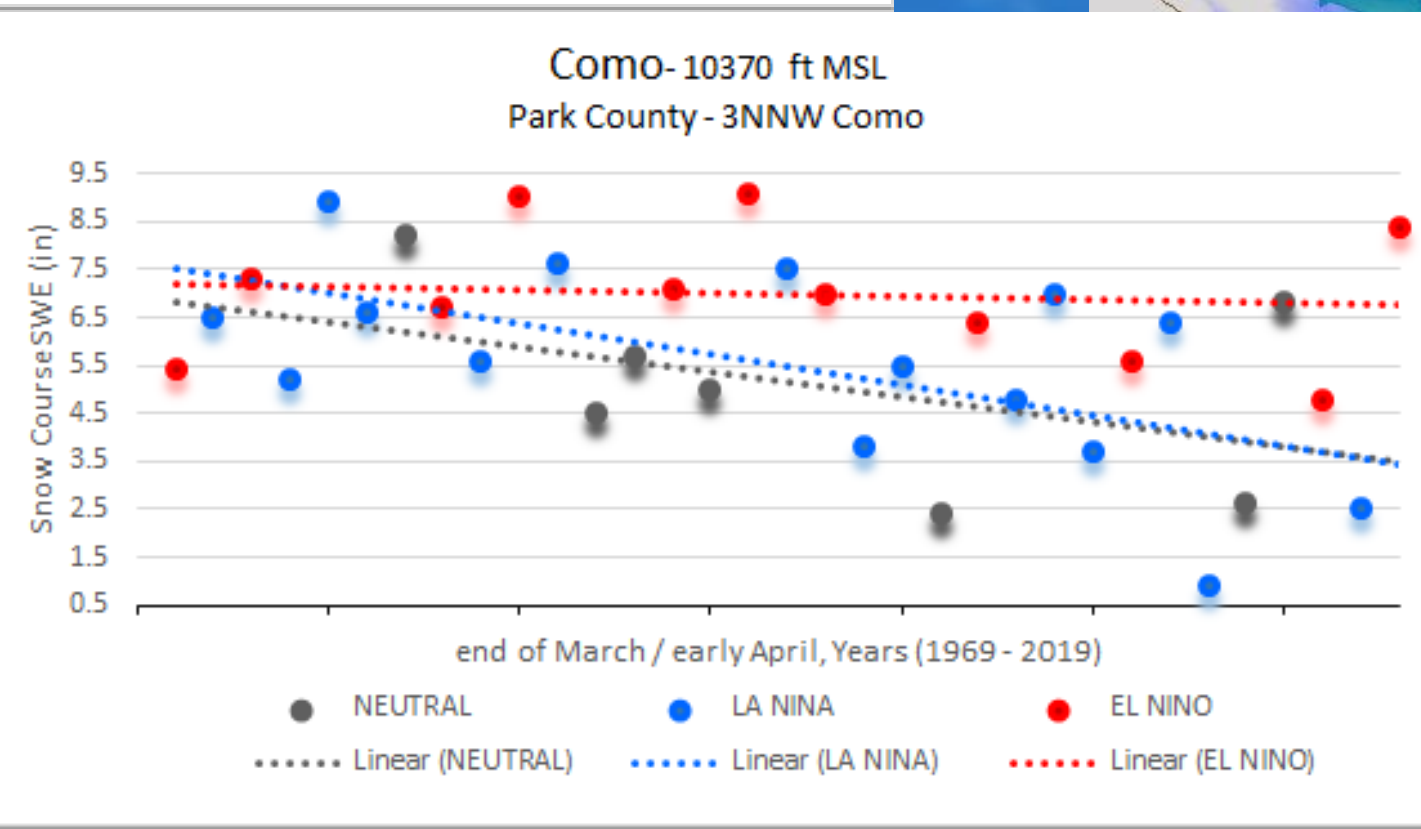
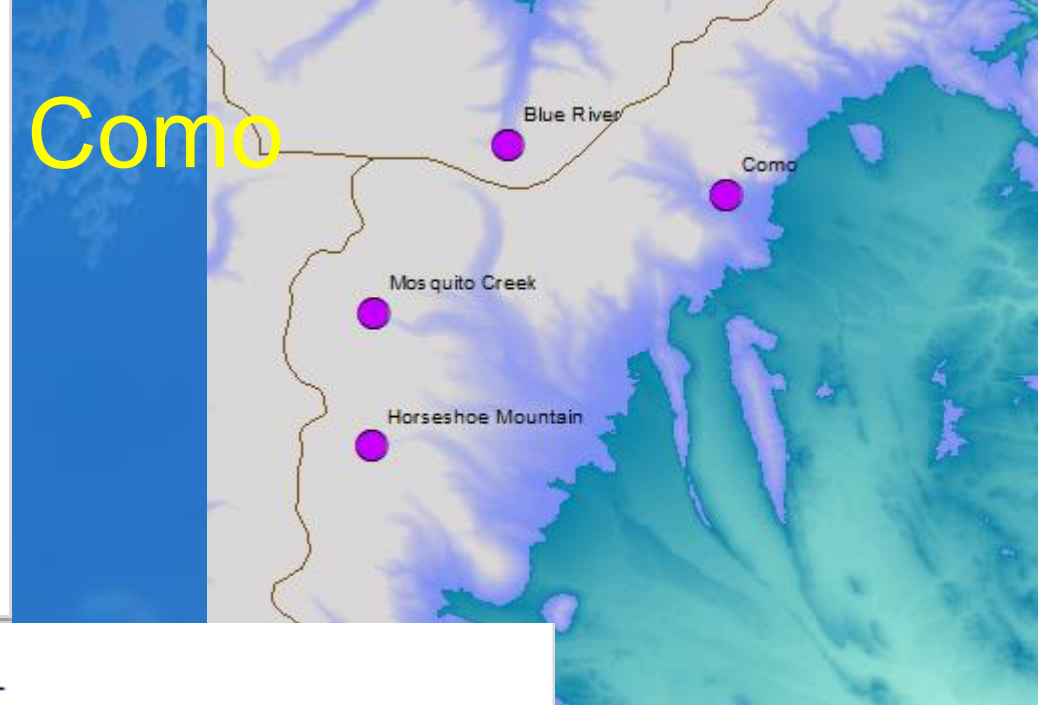
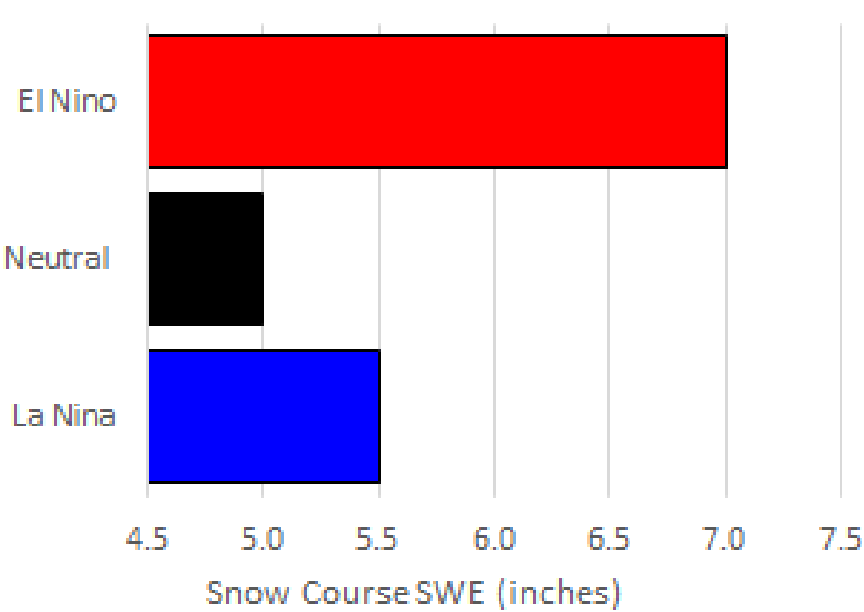


Columbine Lodge

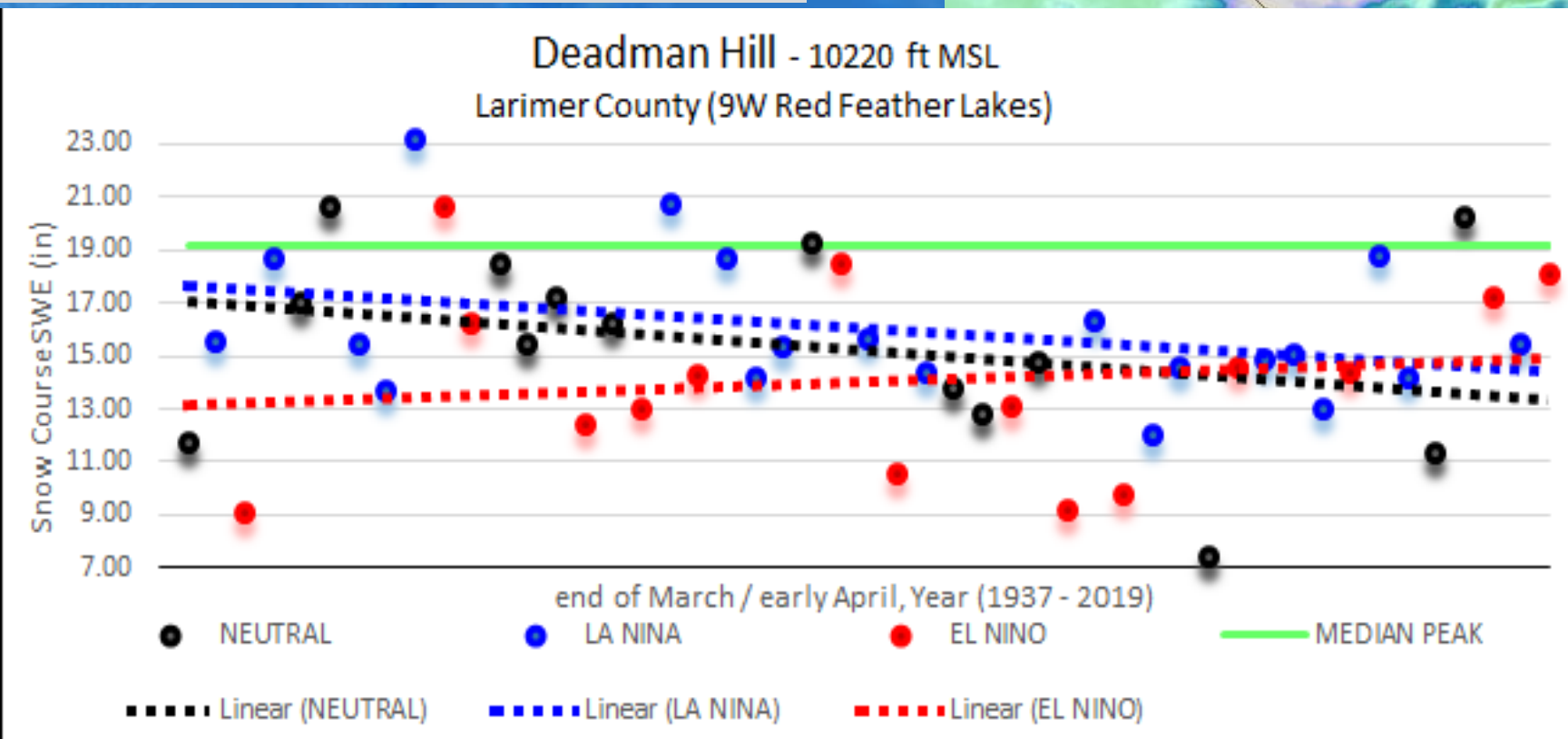
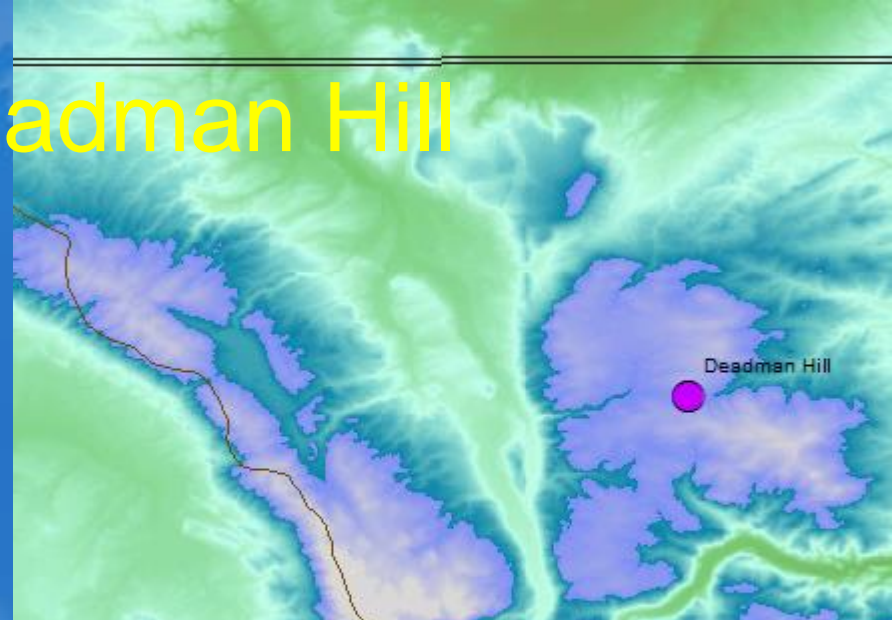
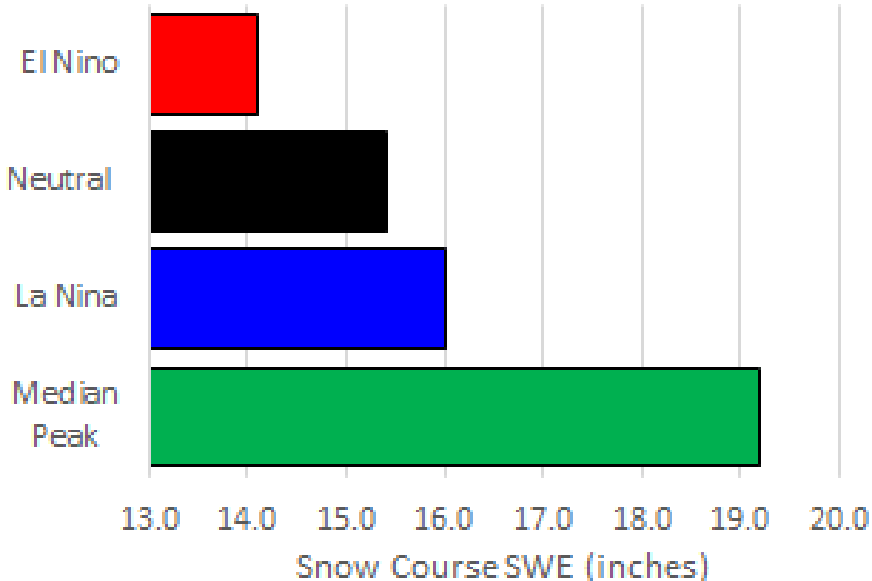


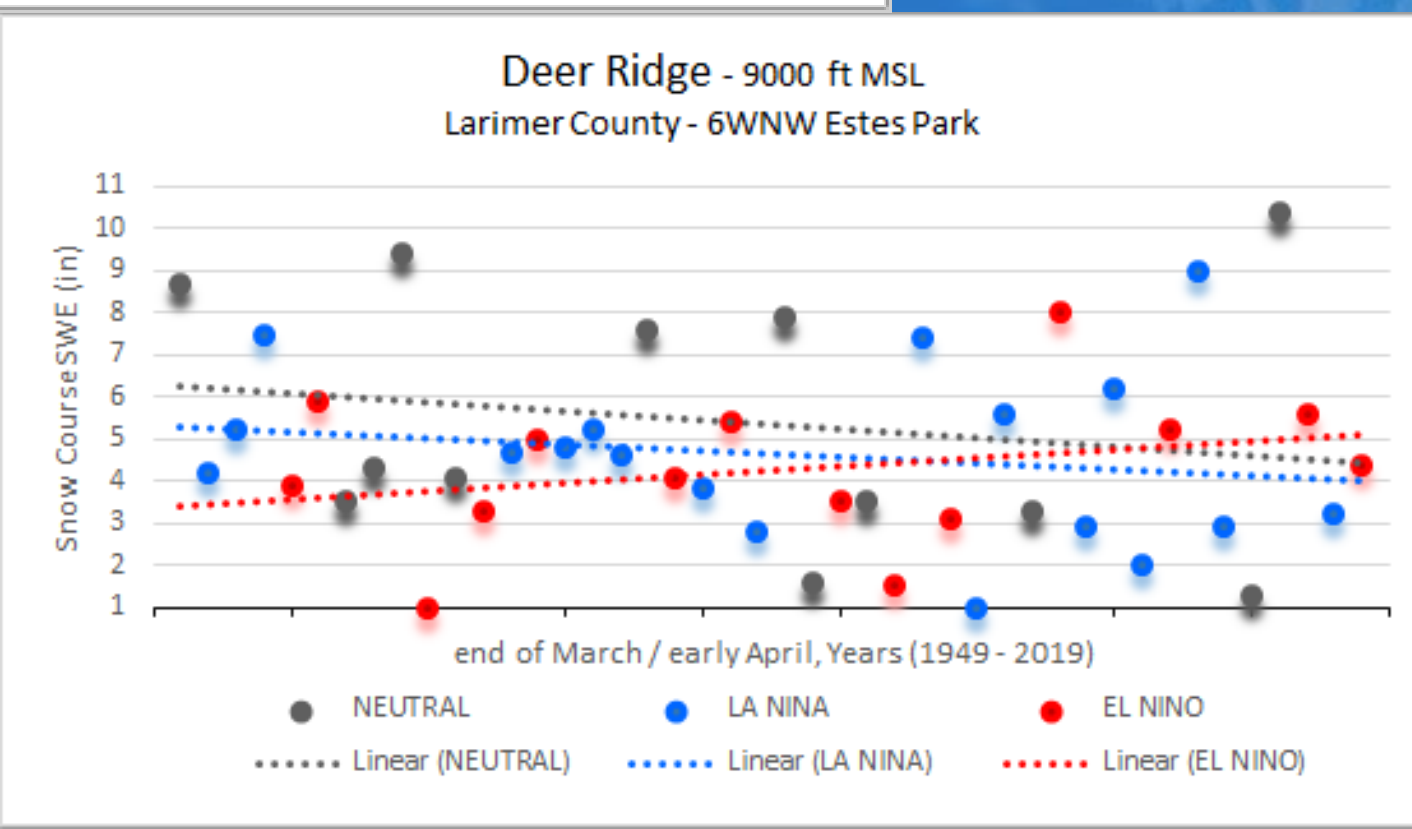
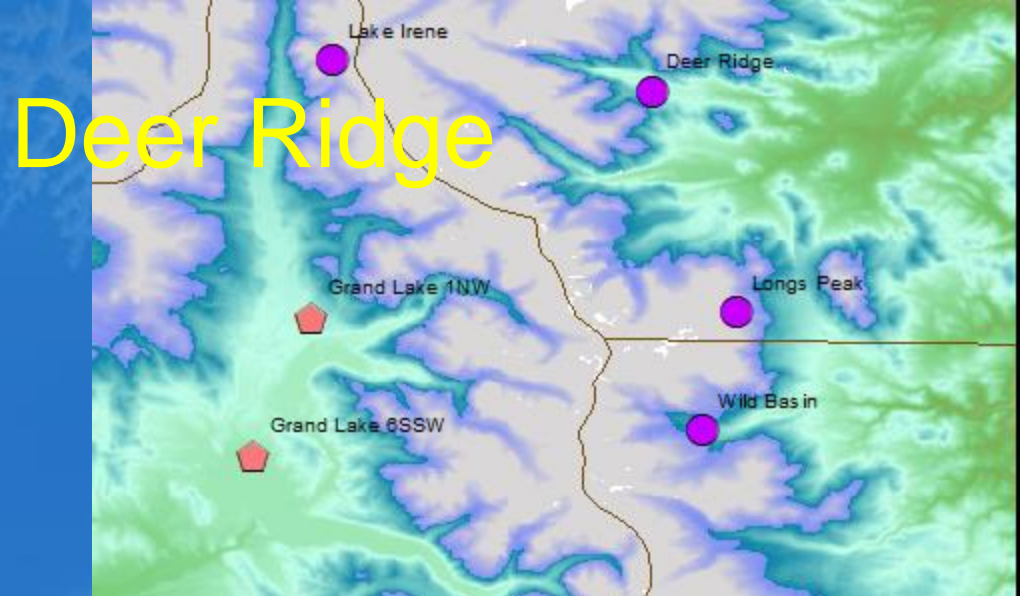
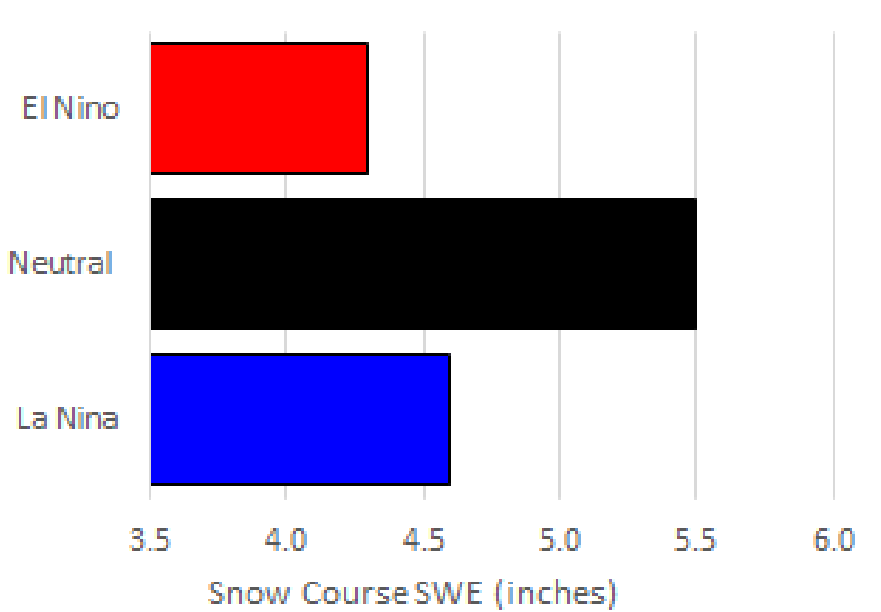
Columbine Lodge - 9160 ft MSL
Jackson County - 13SE Steamboat Springs

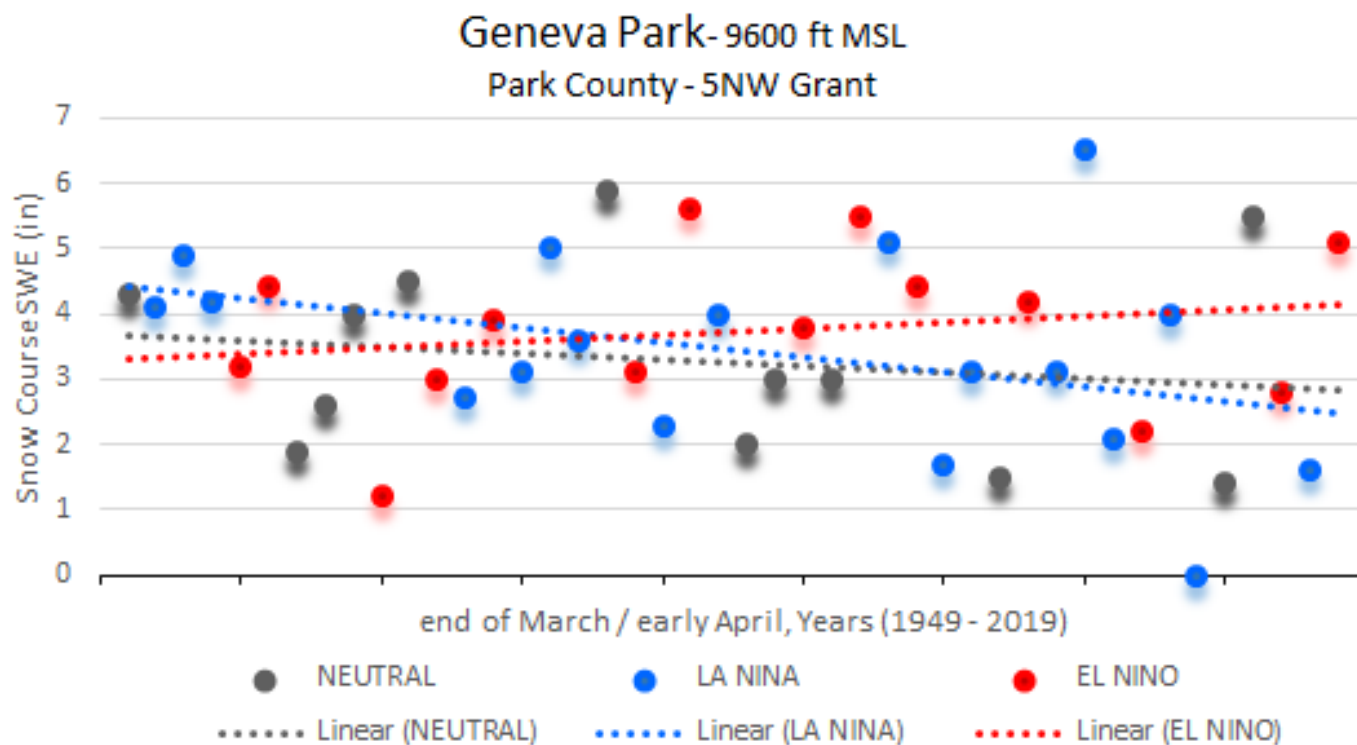
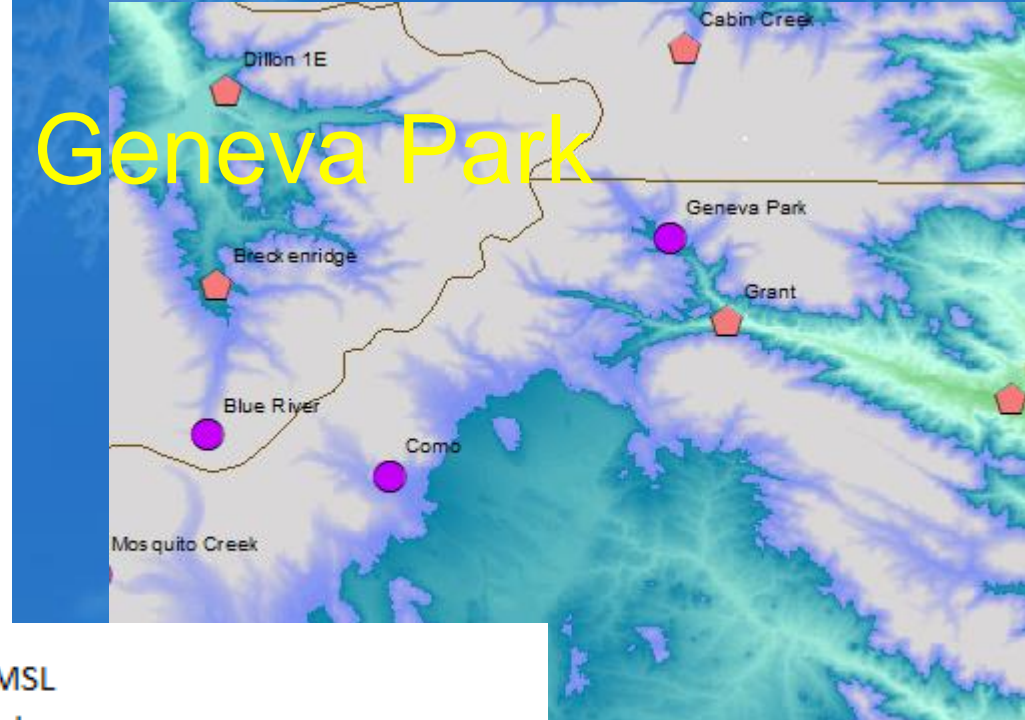
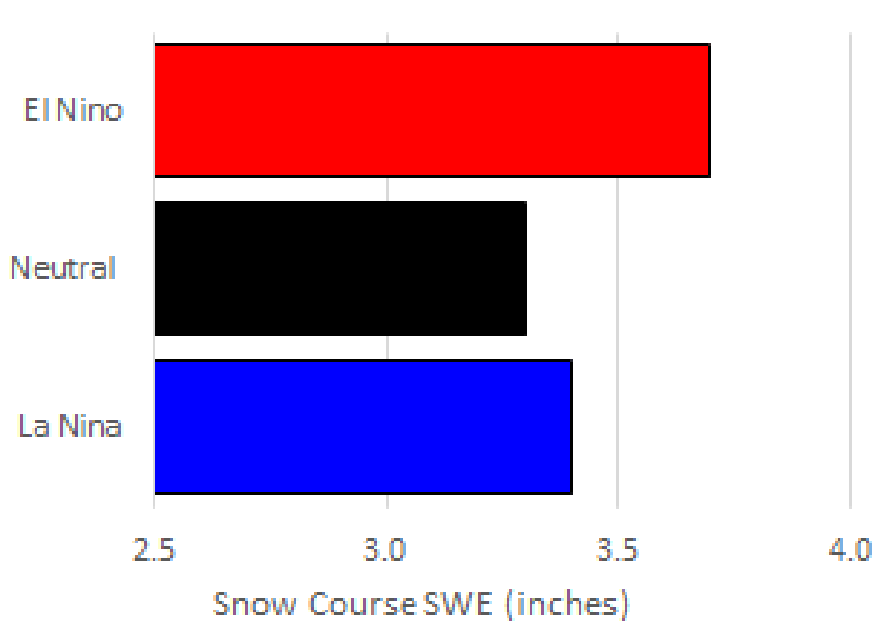


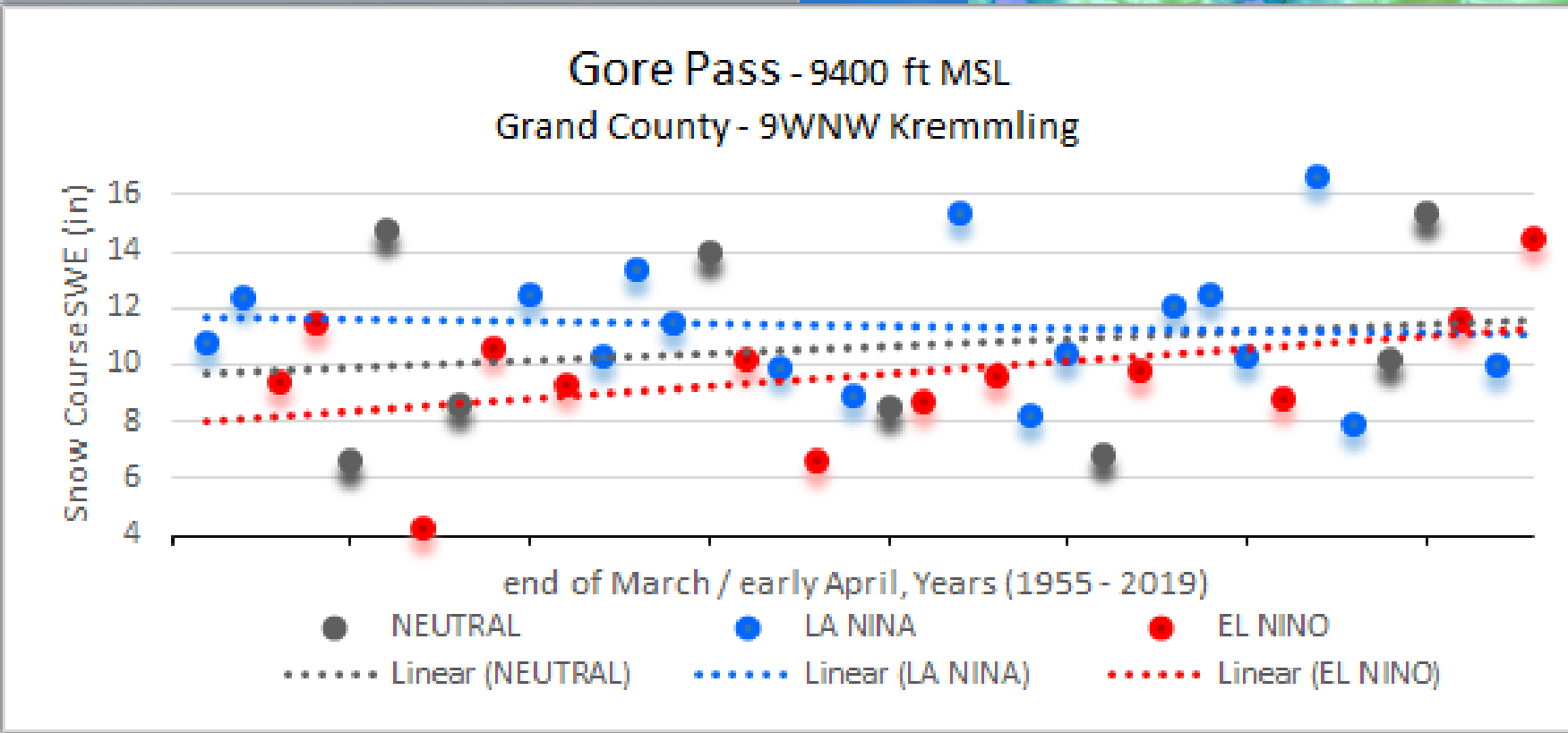
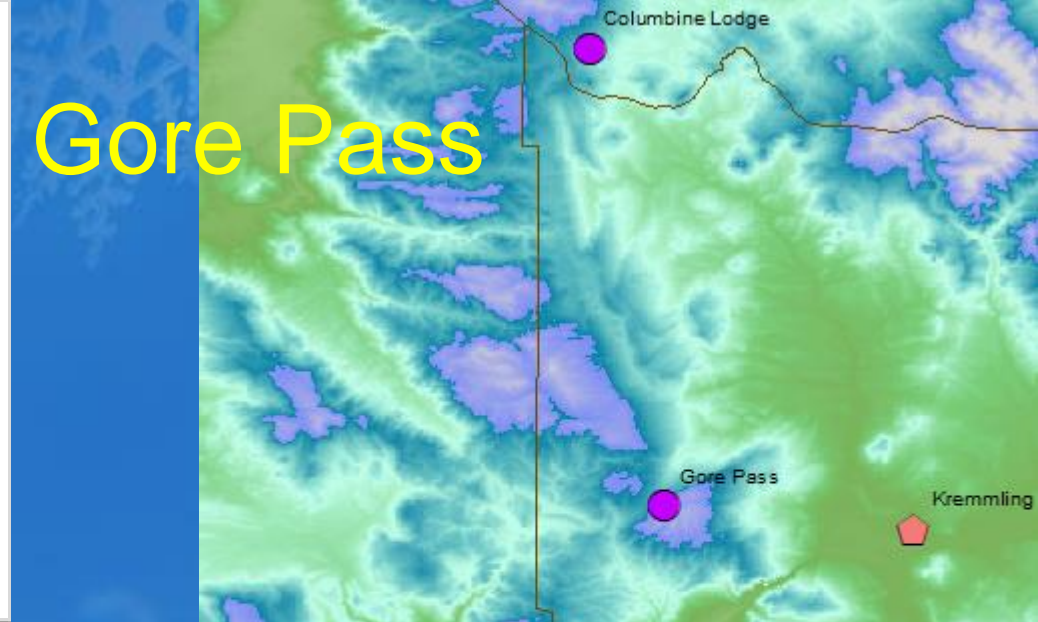
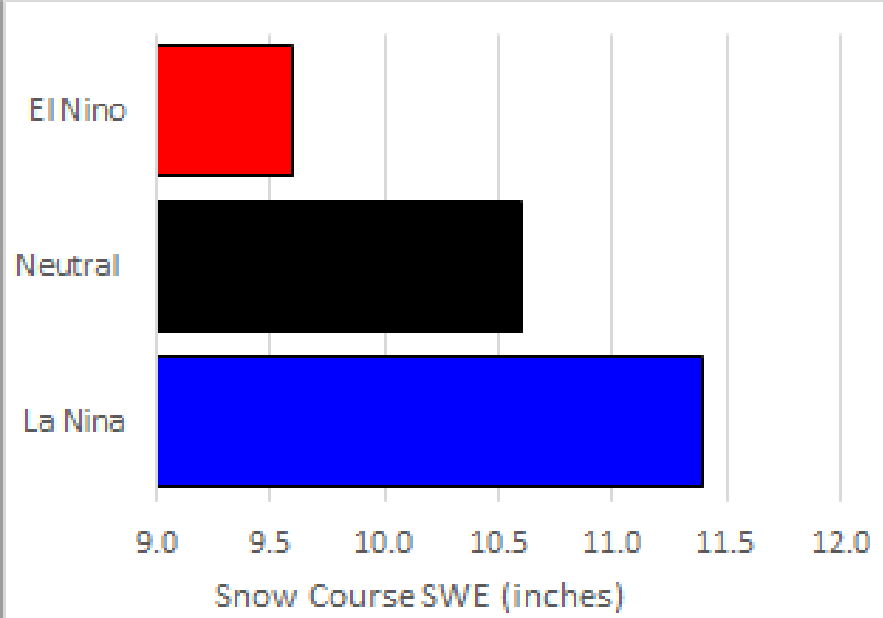


Deadman Hill

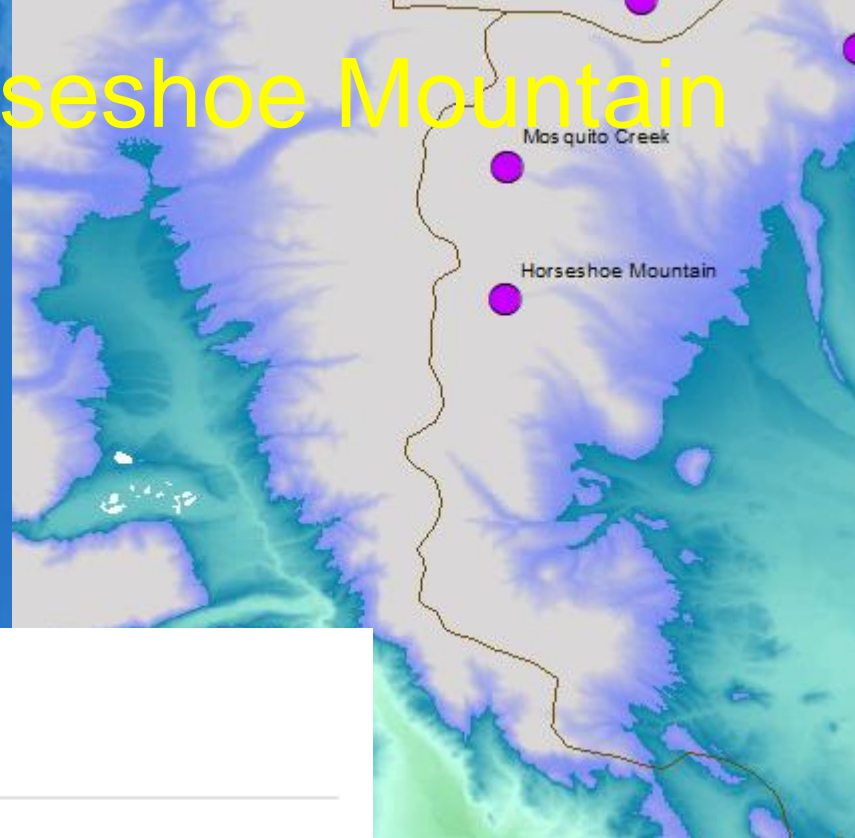
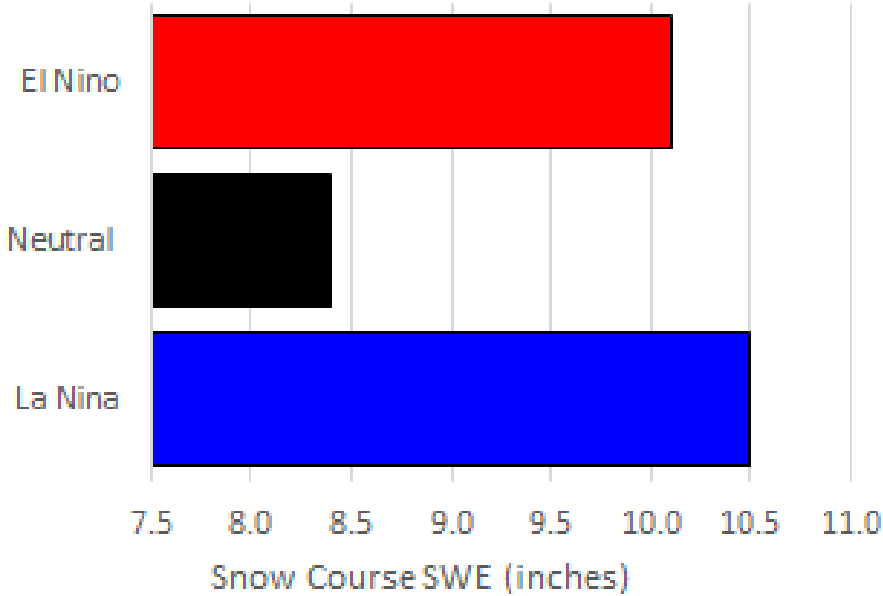




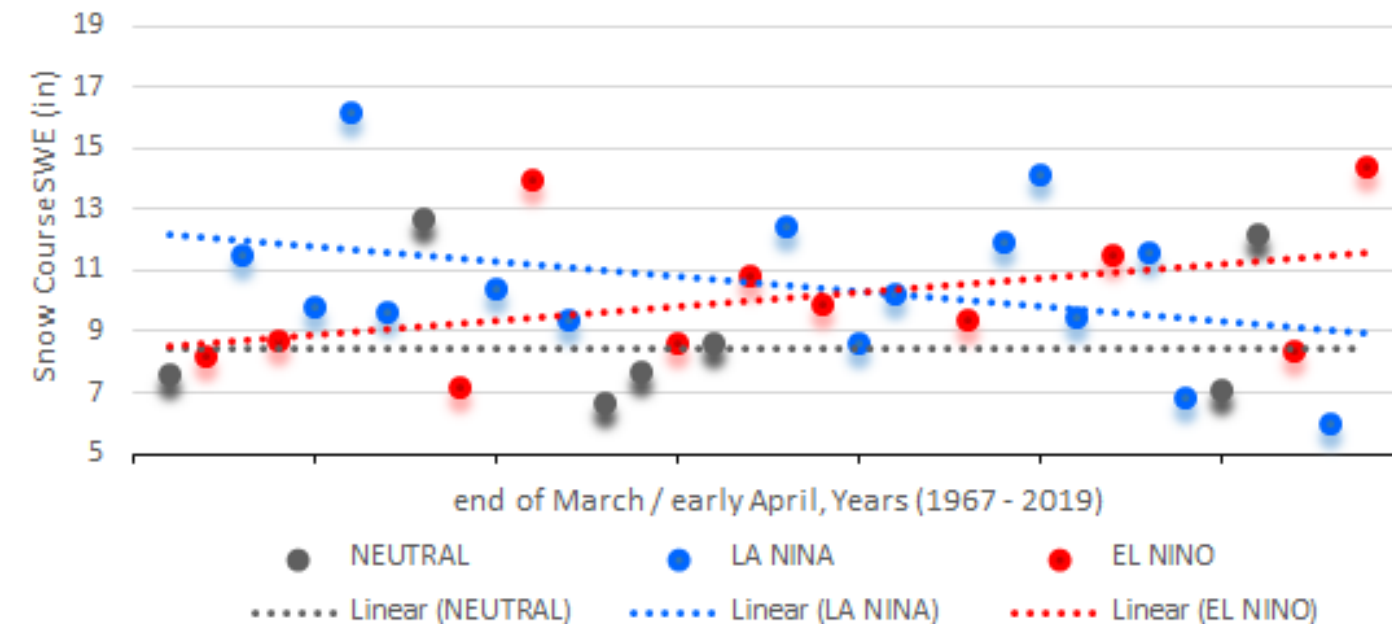


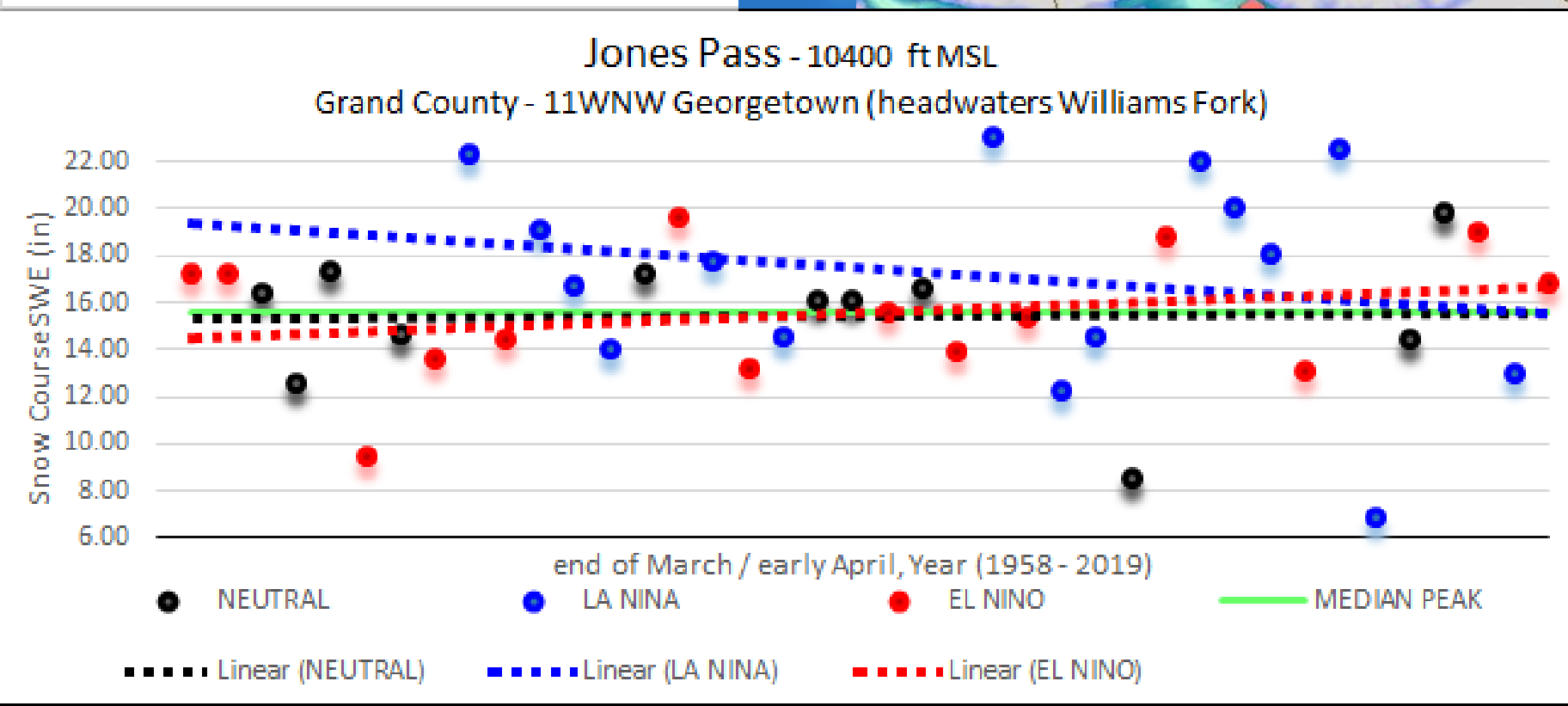
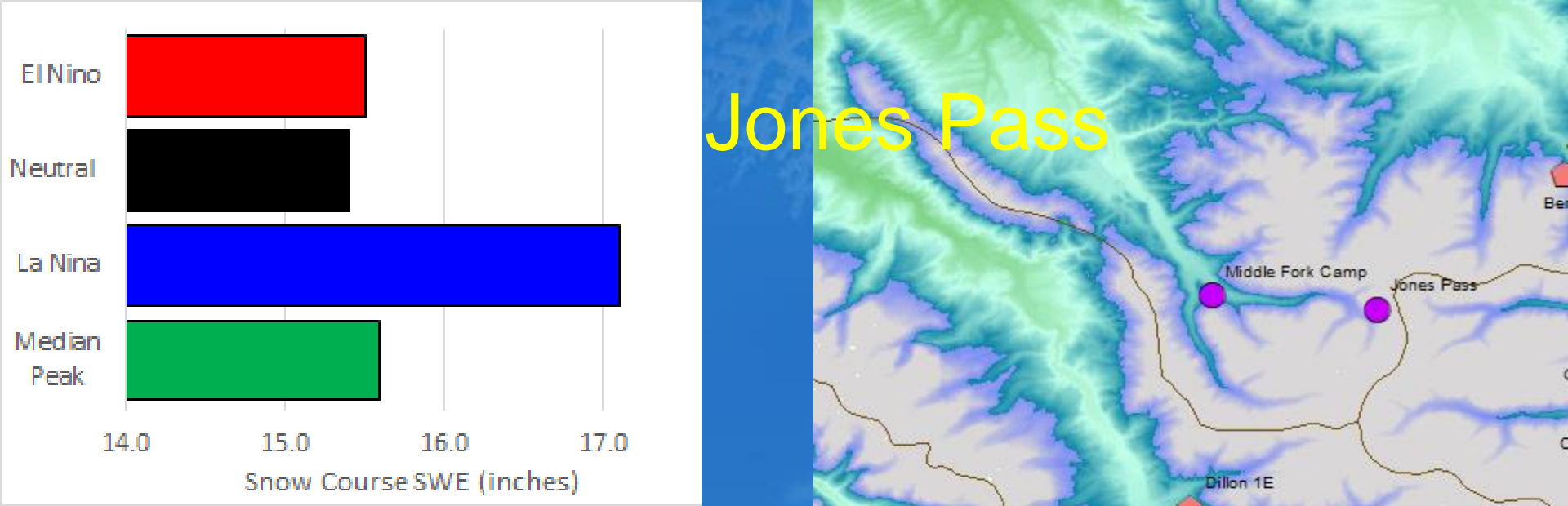


Horseshoe Mountain

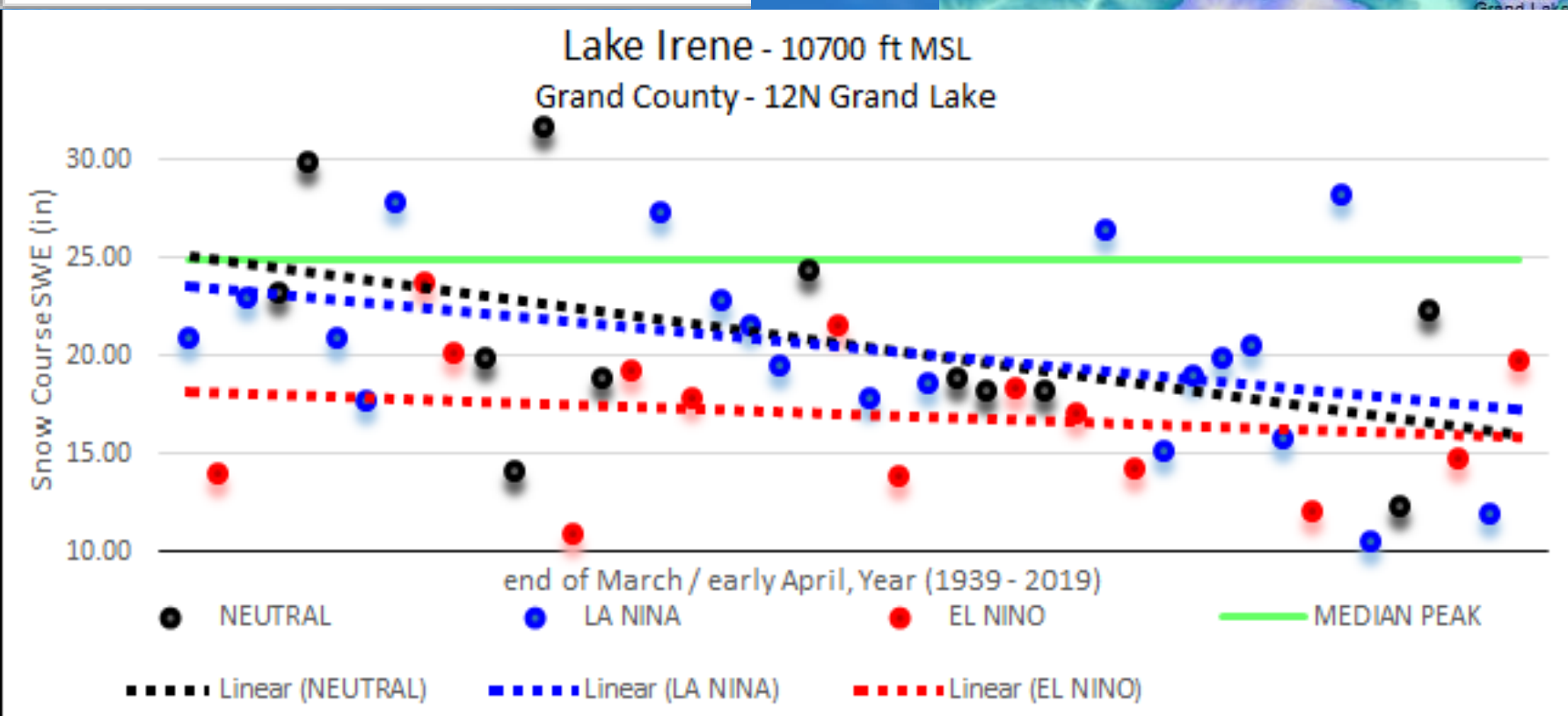
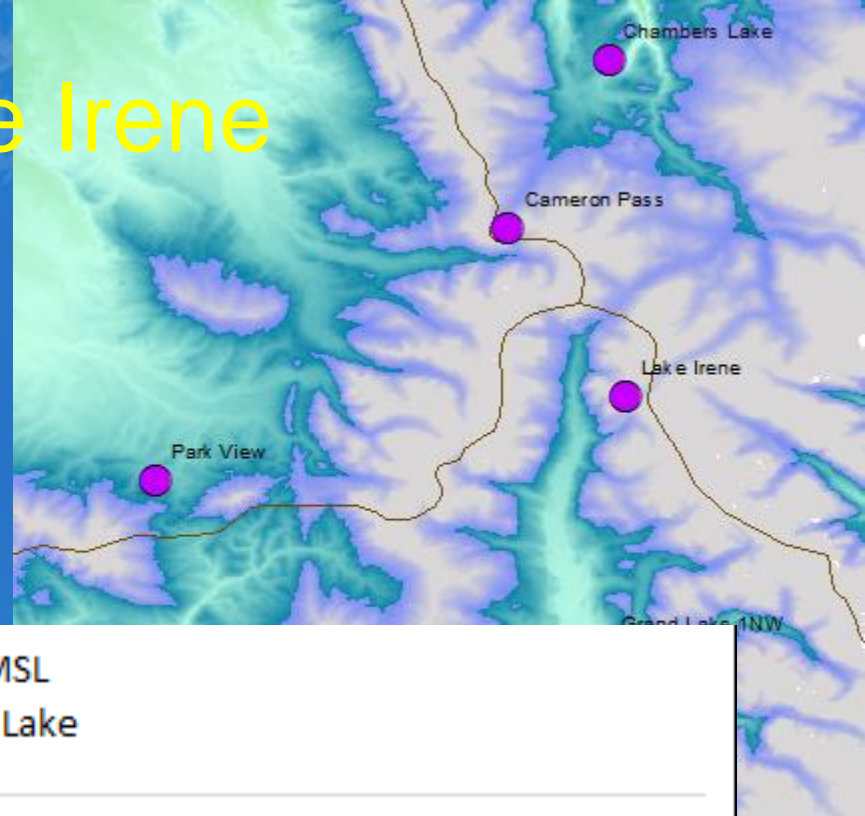
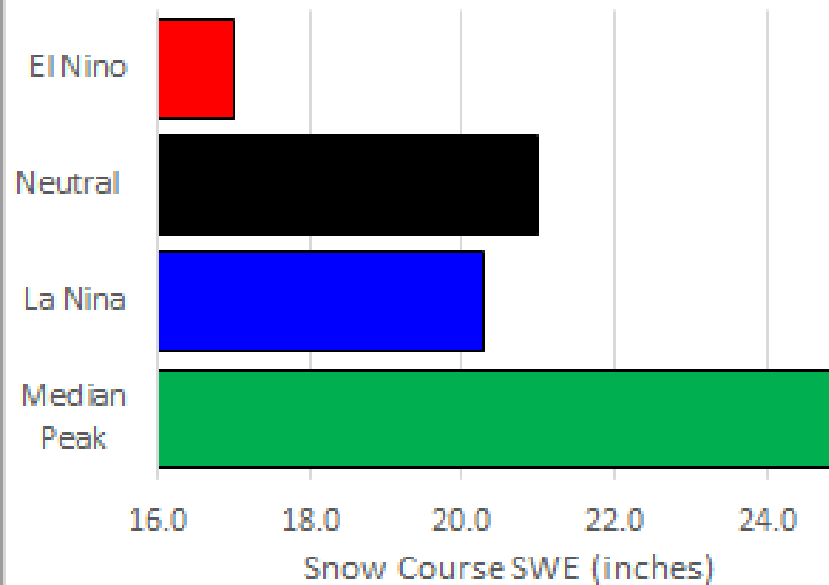


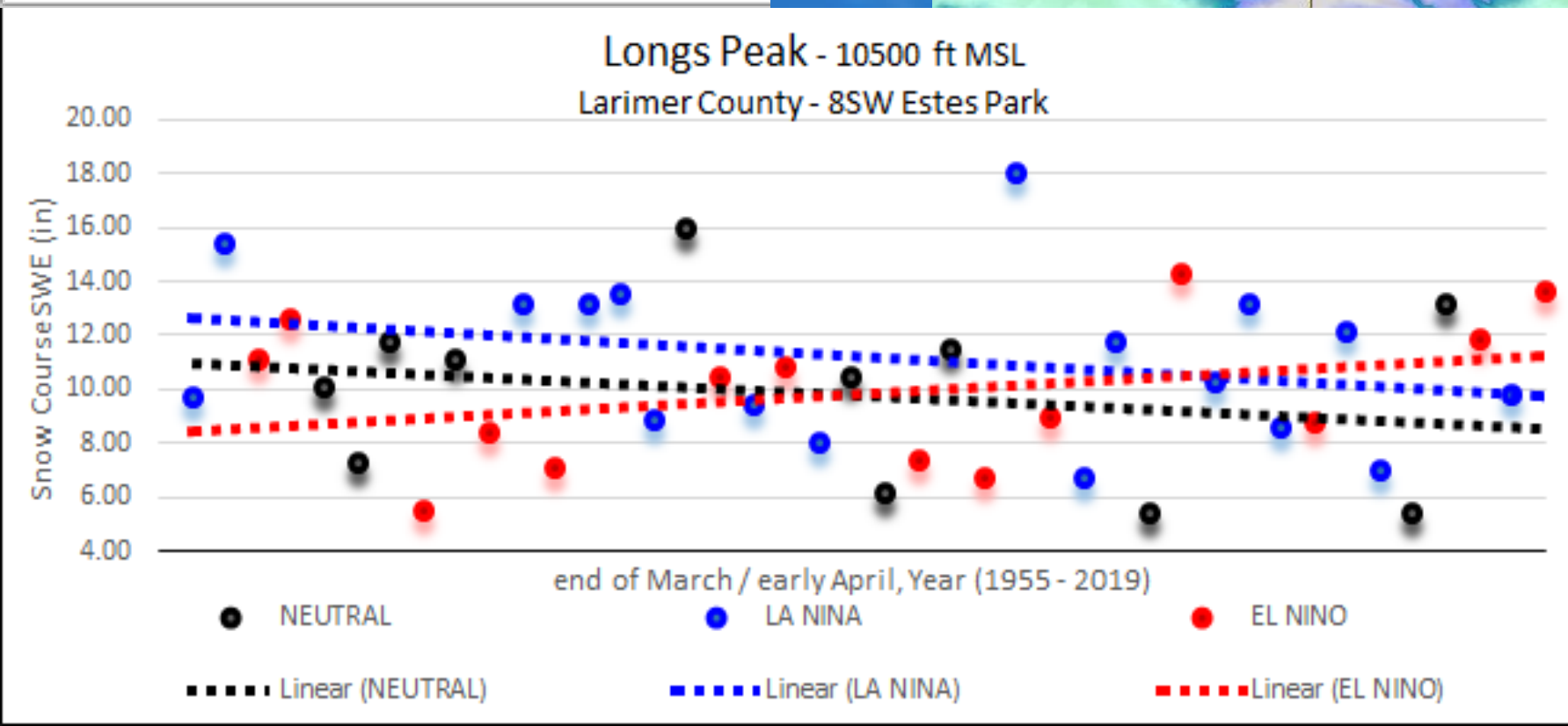
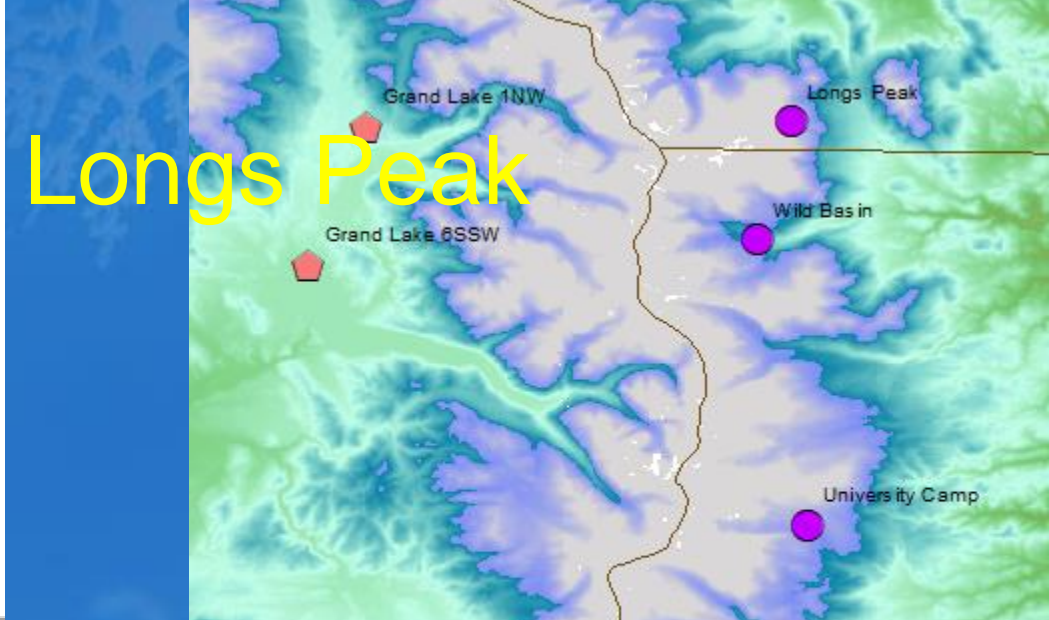
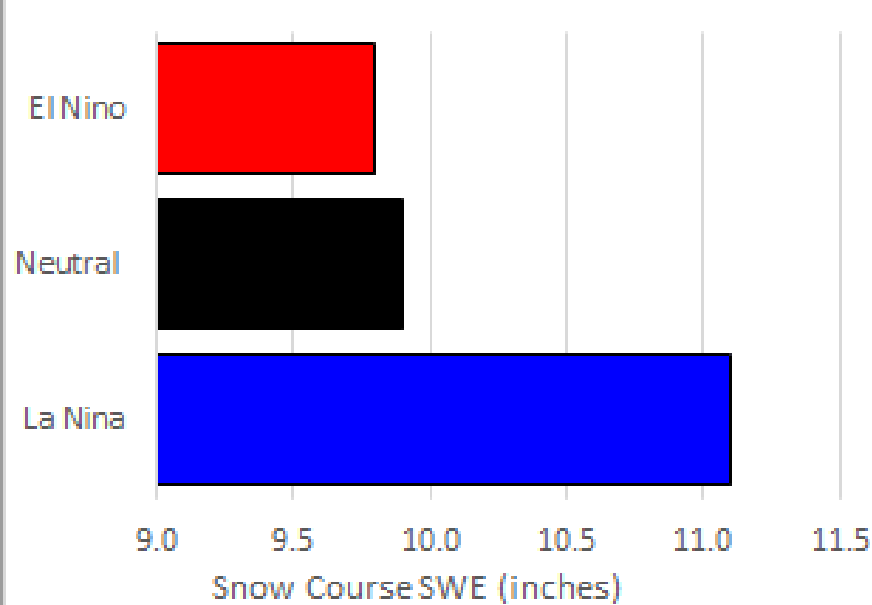
Horseshoe Mountain - 11220 ft MSL
Park County - 7WSW Fairplay



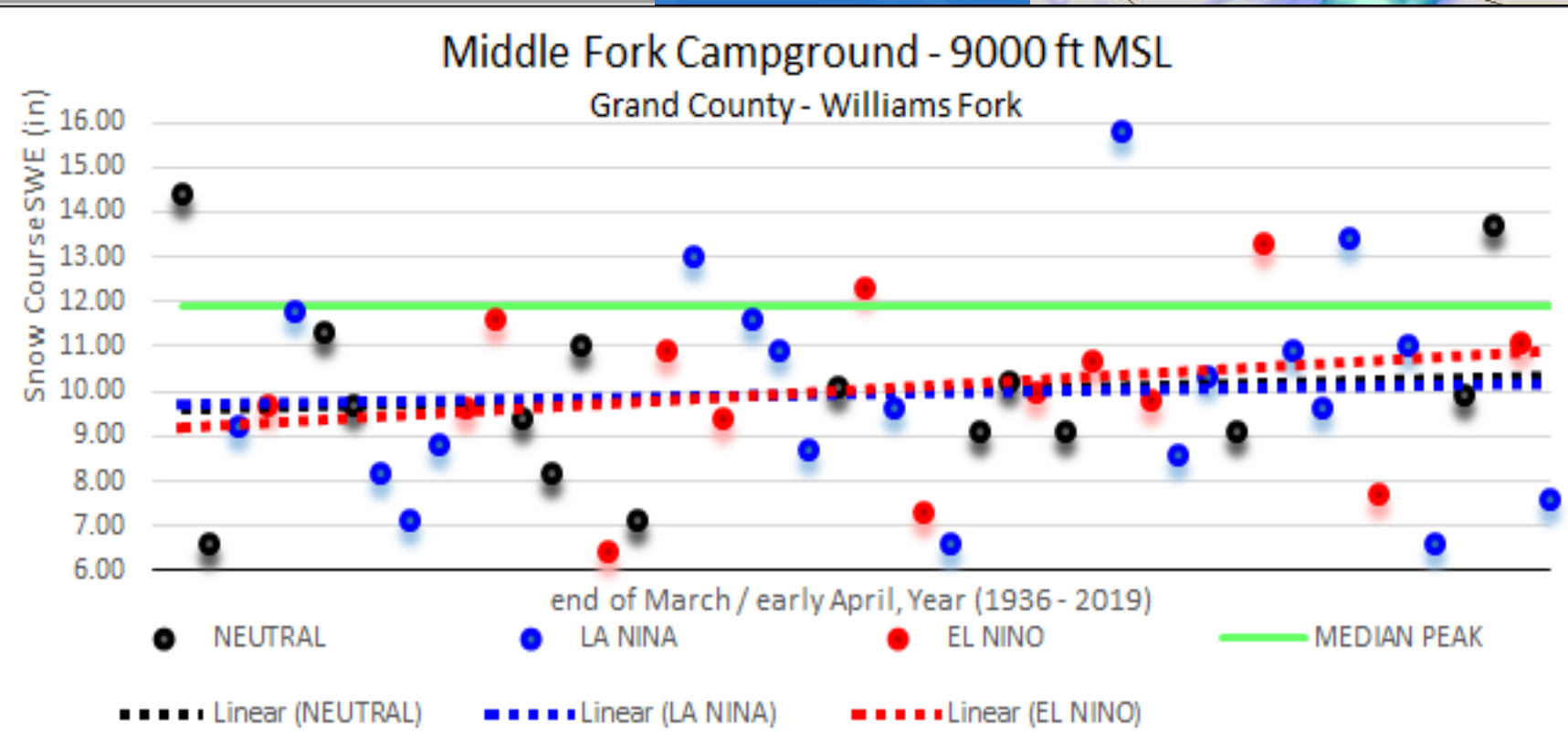
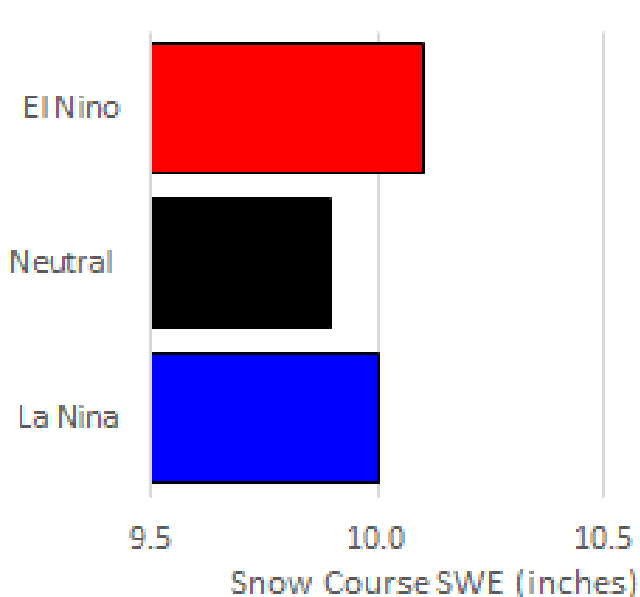


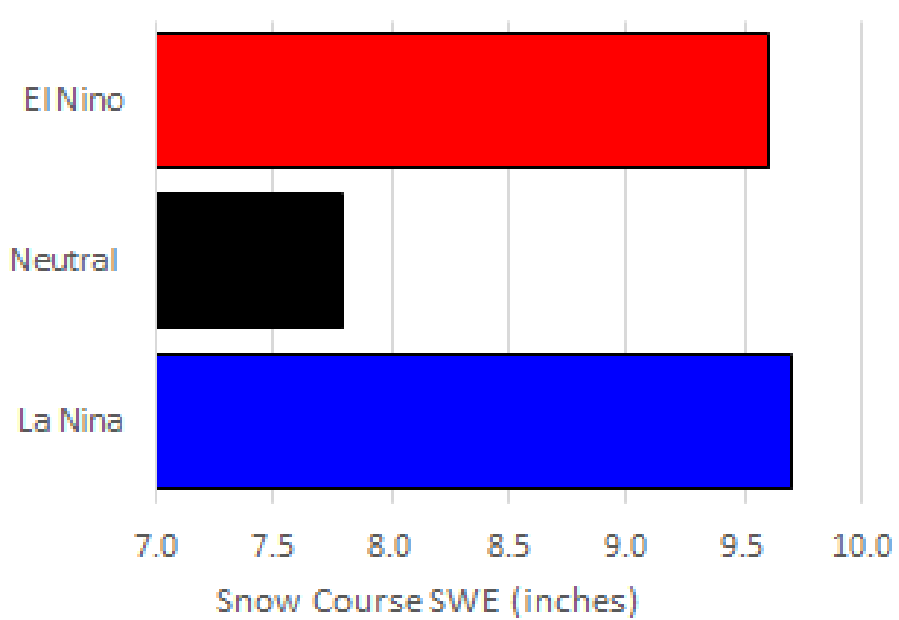
Lake Irene



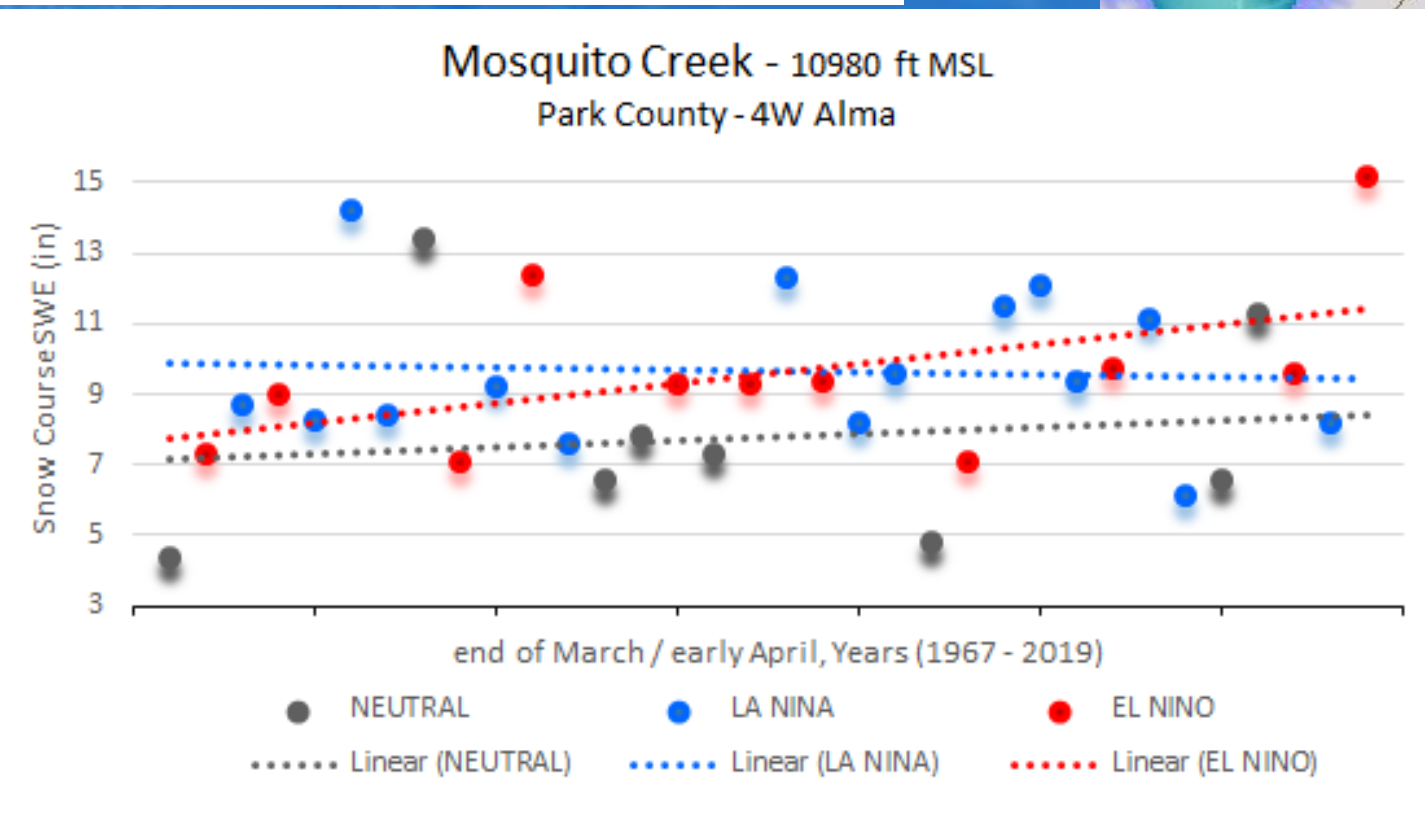
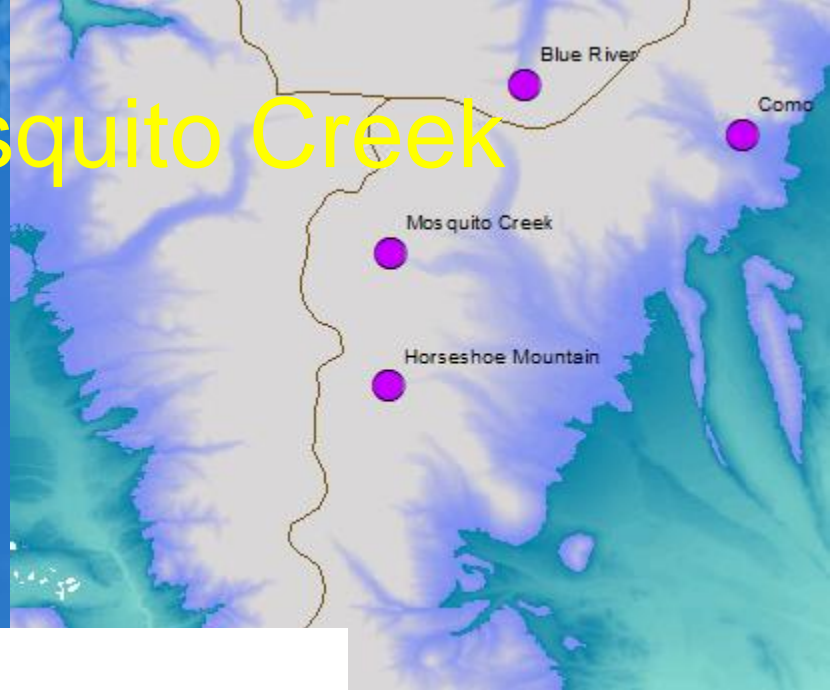


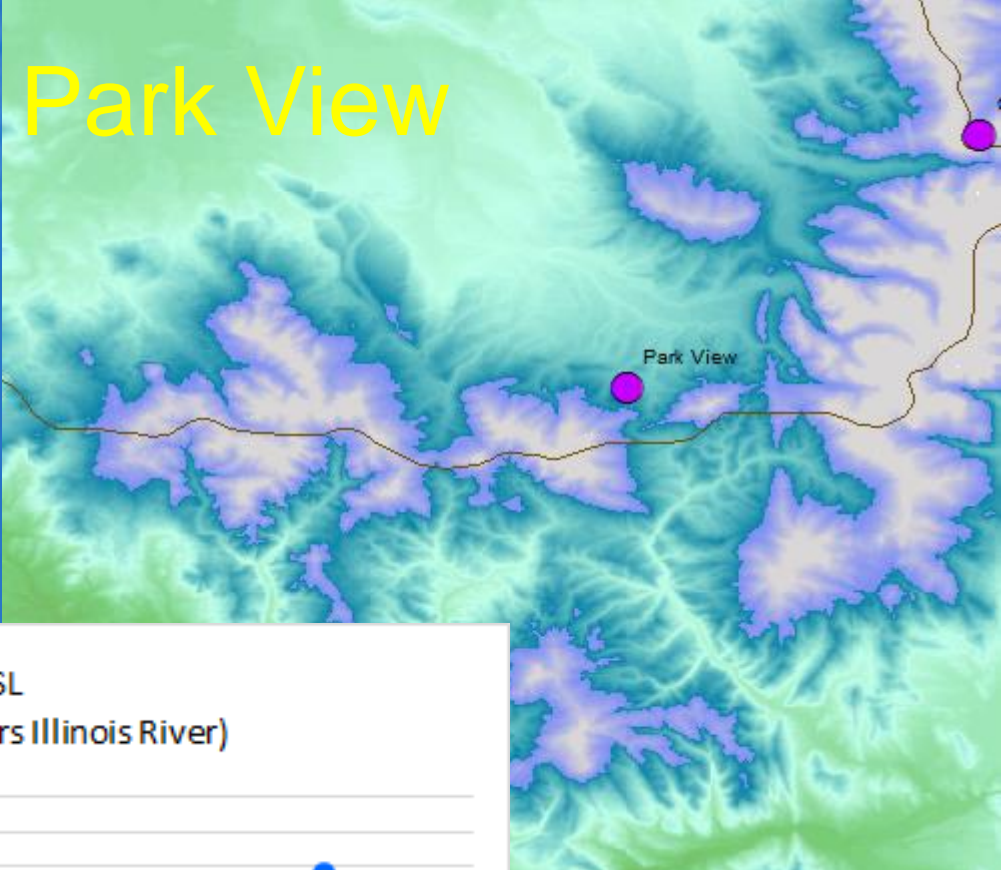
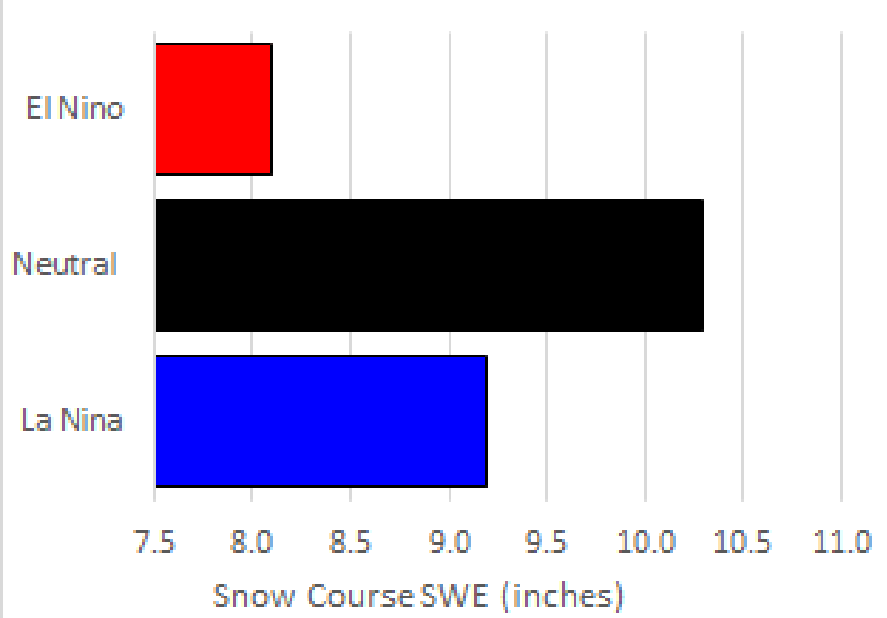
Middle Fork Camp



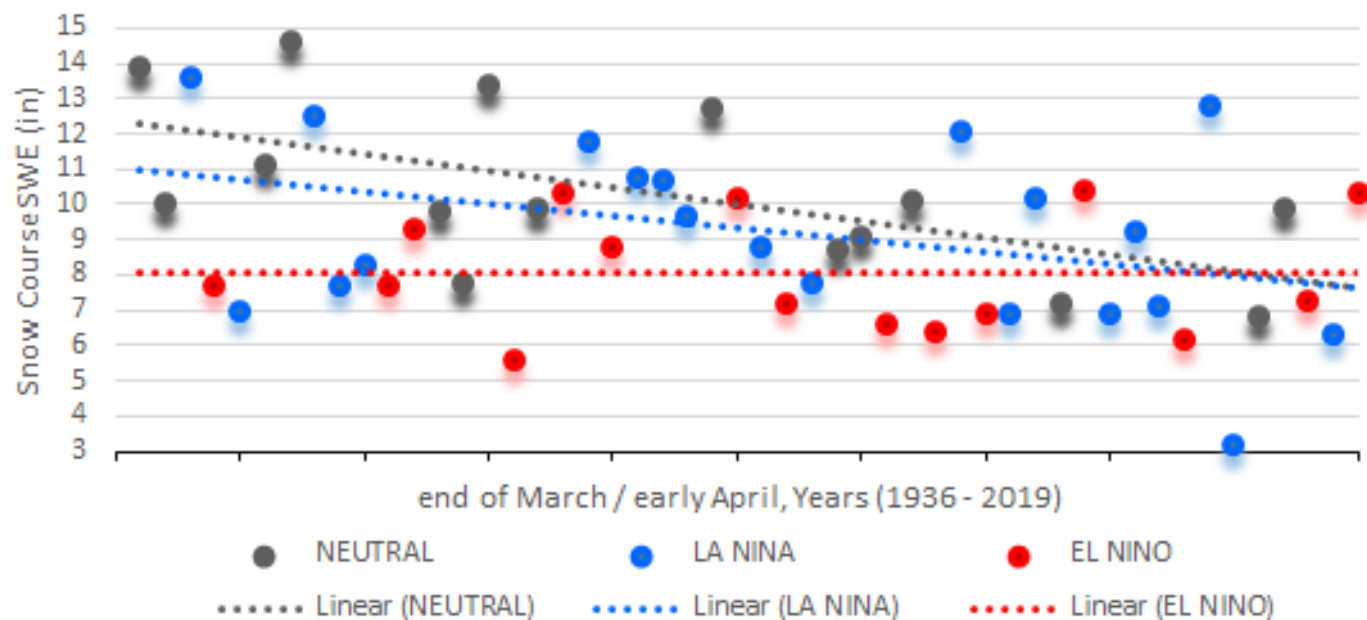


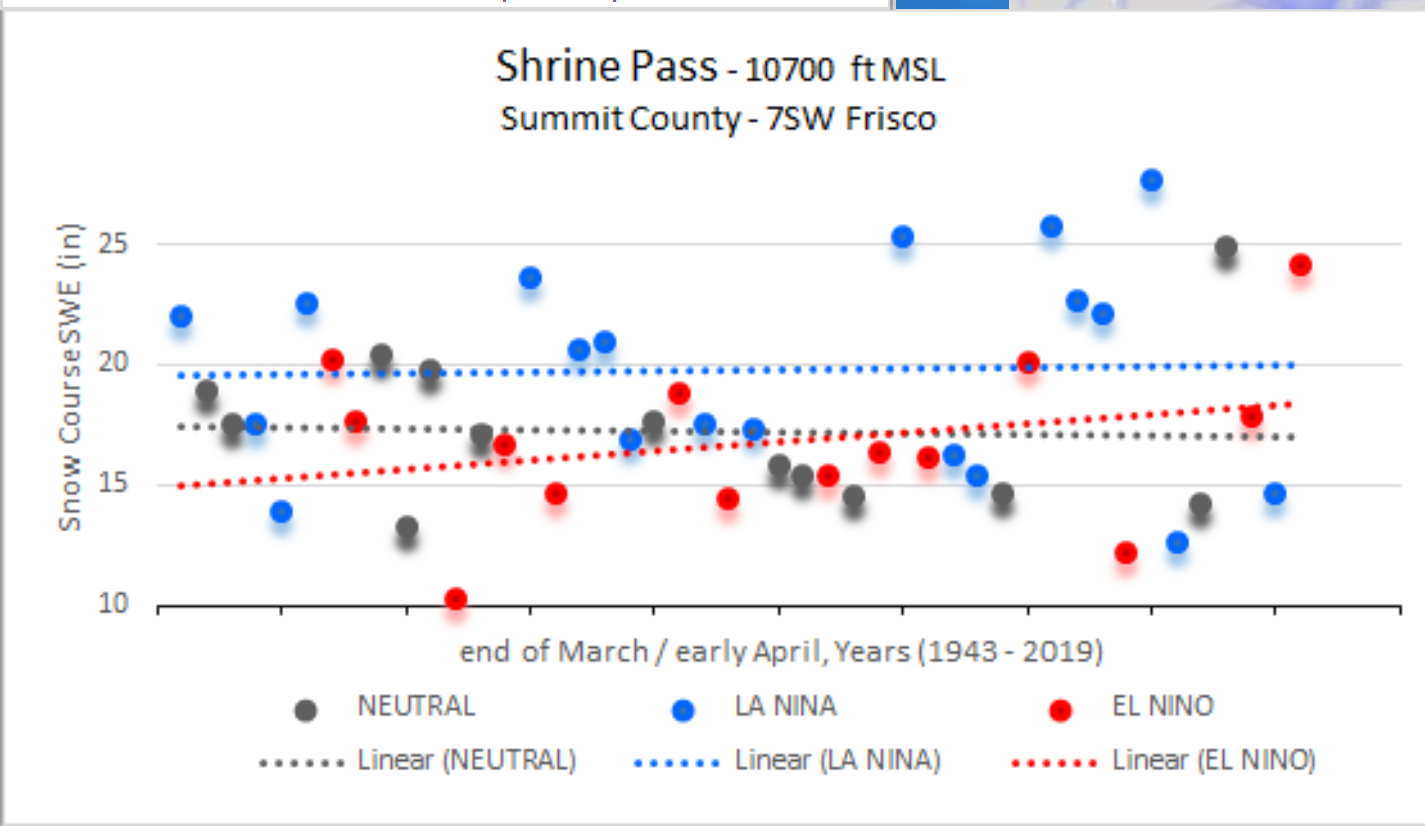
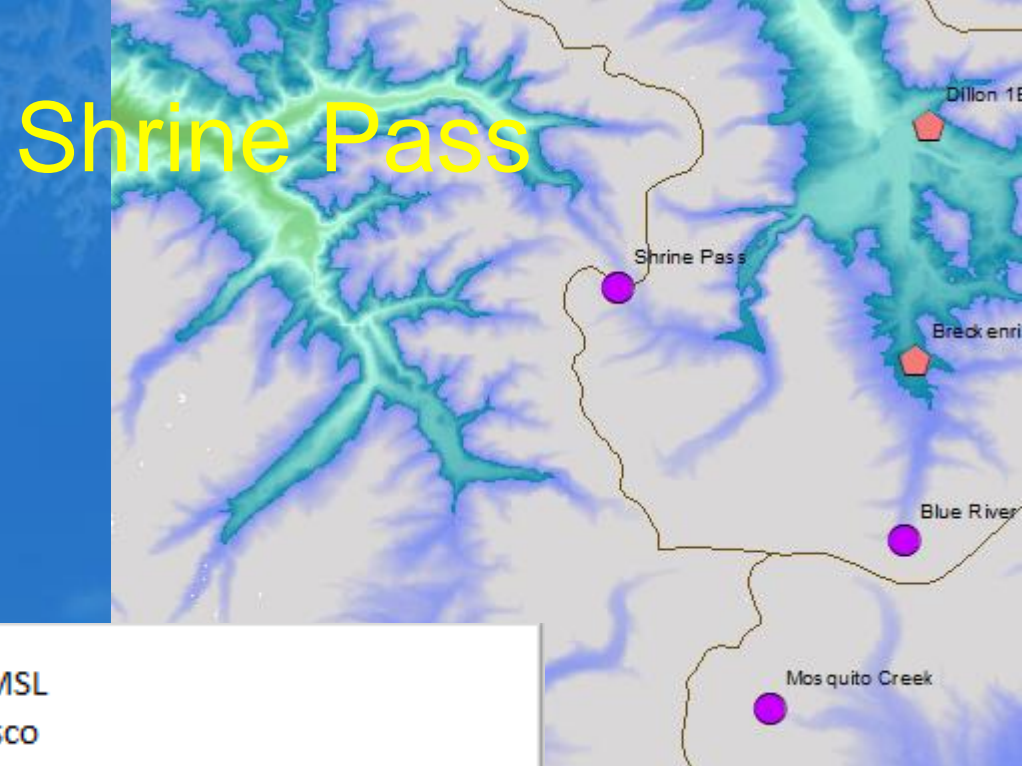
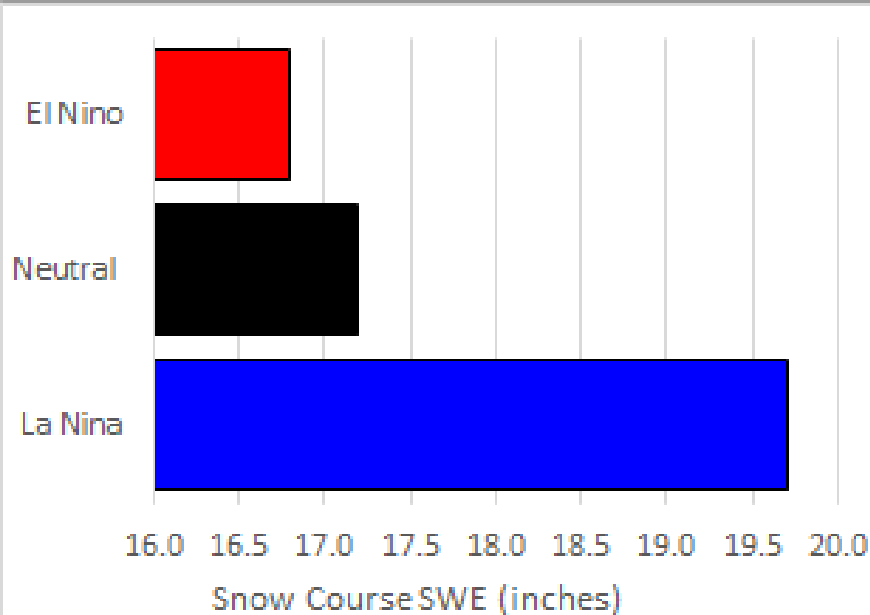
Mosquito Creek

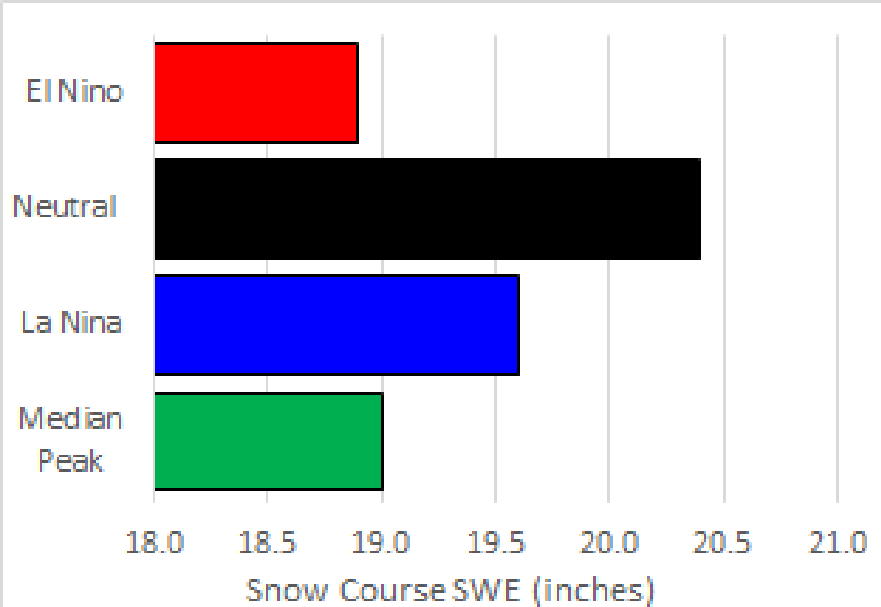




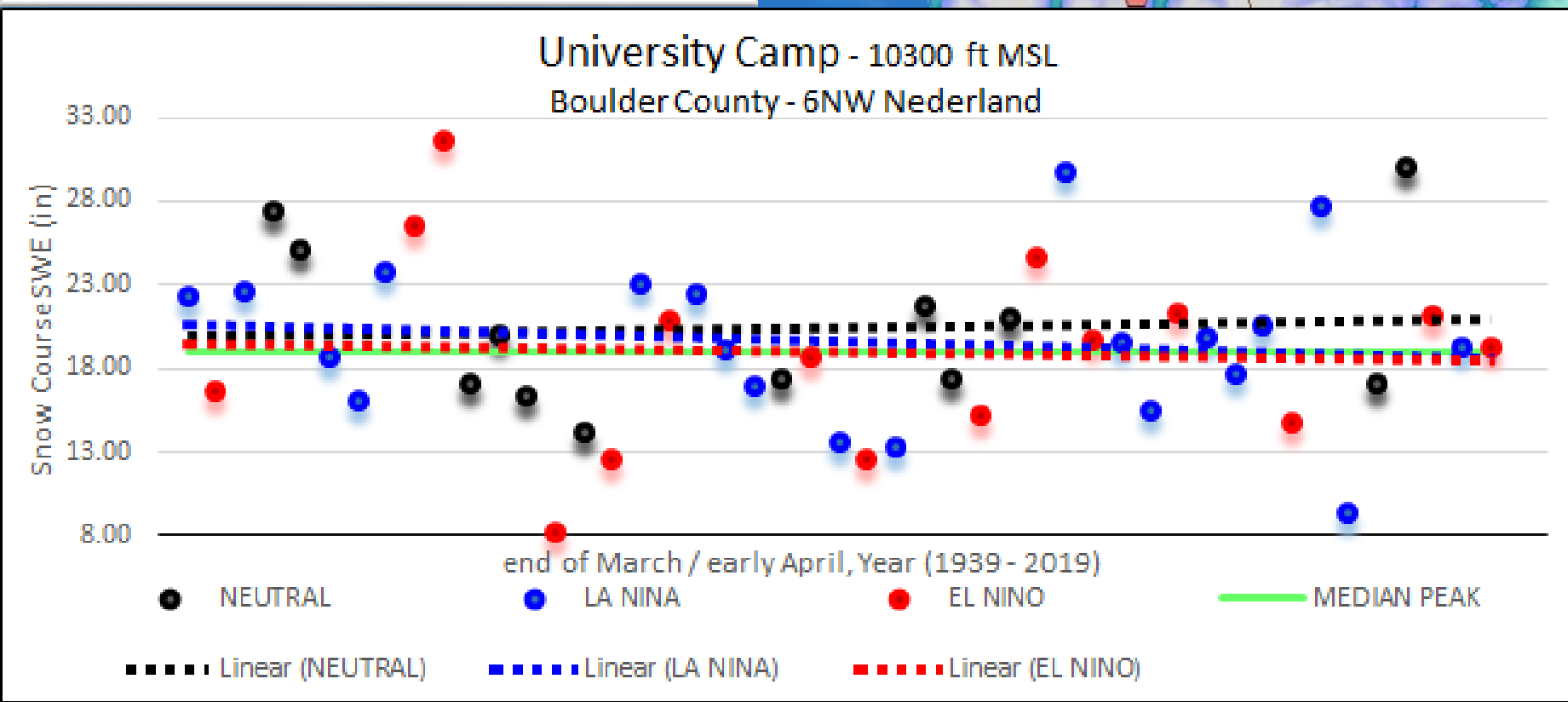
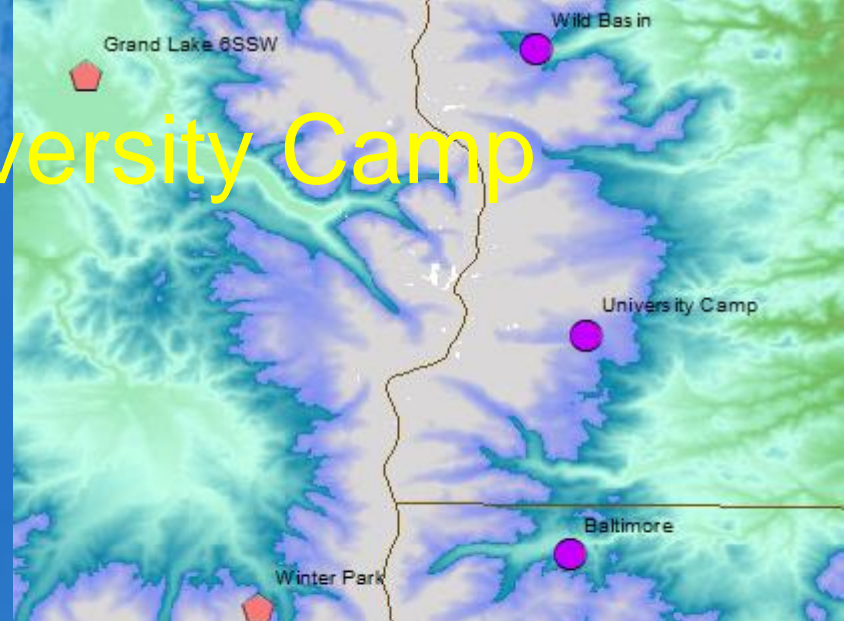
Park View - 9160 ft MSL
Jackson County - 7SE Rand (headwaters Illinois River)

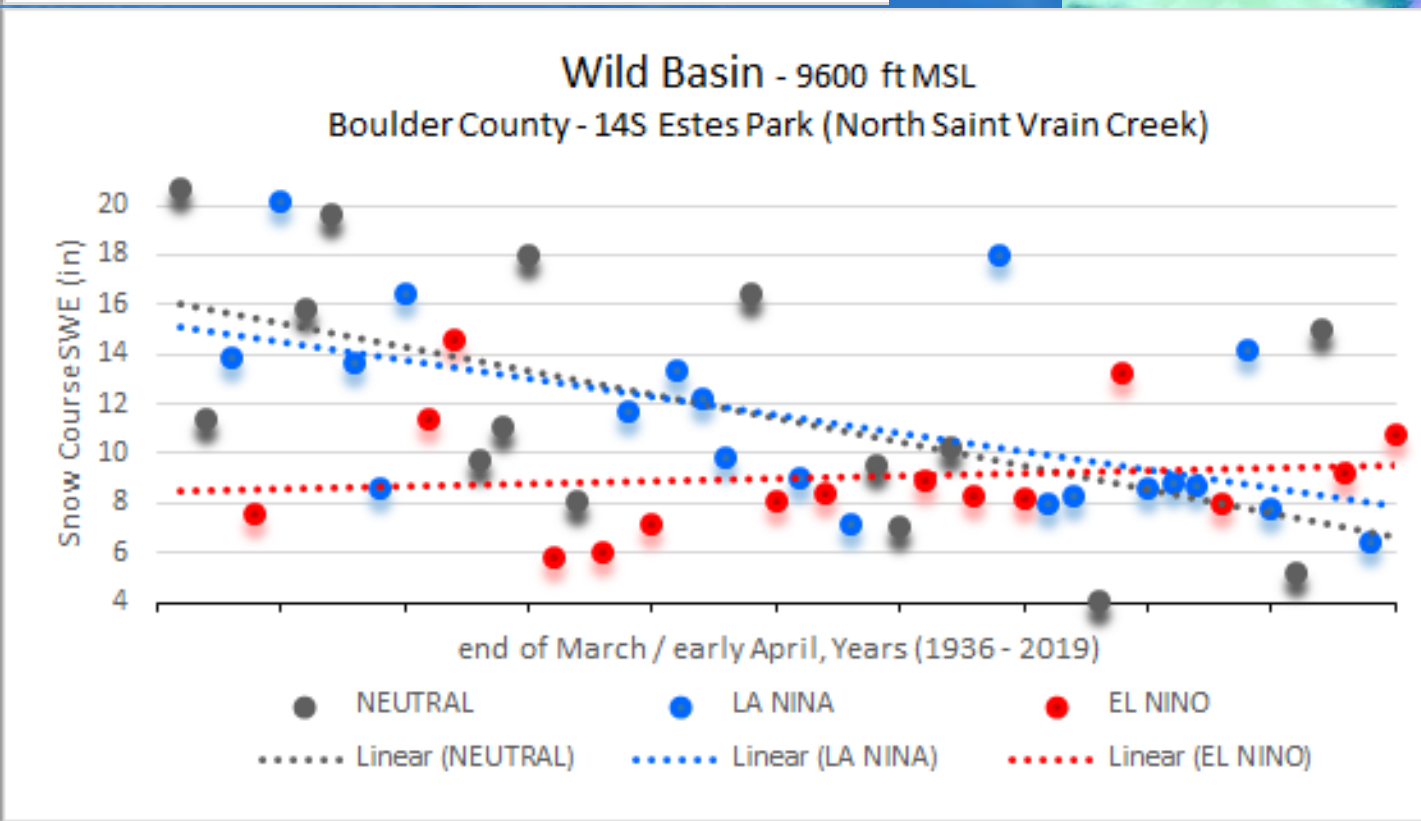
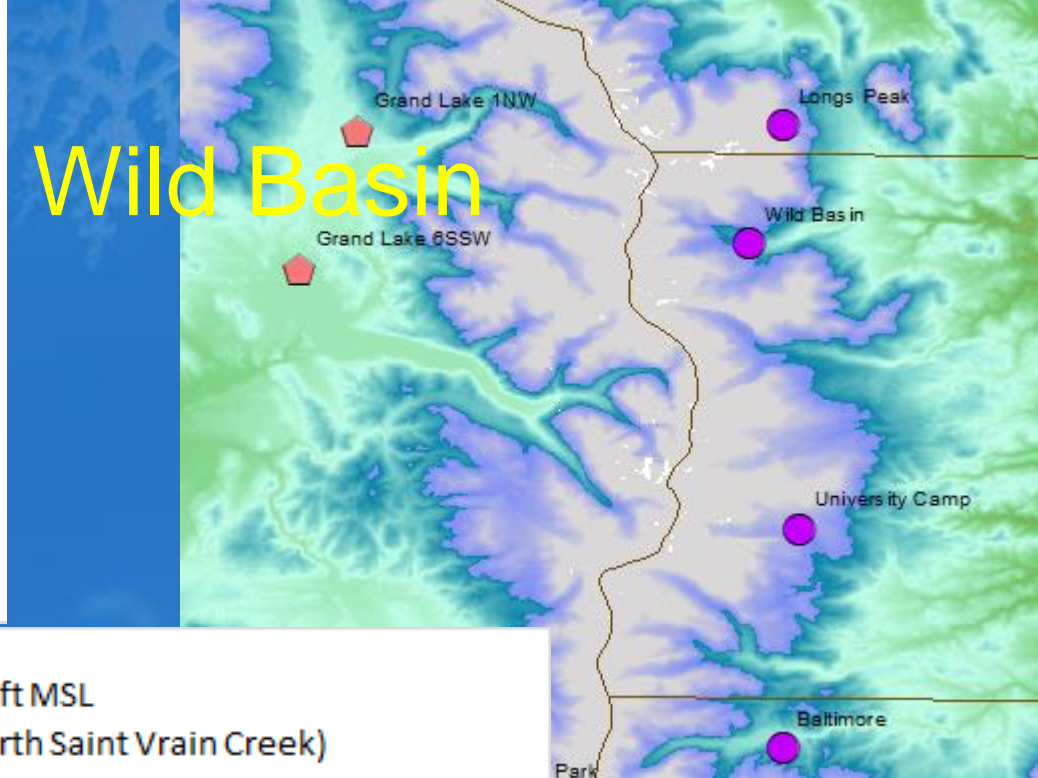
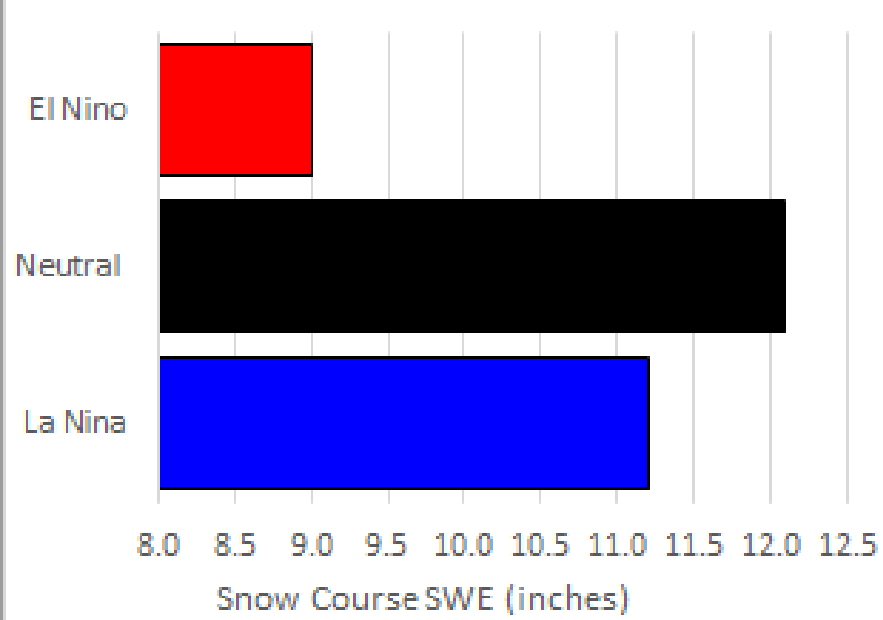


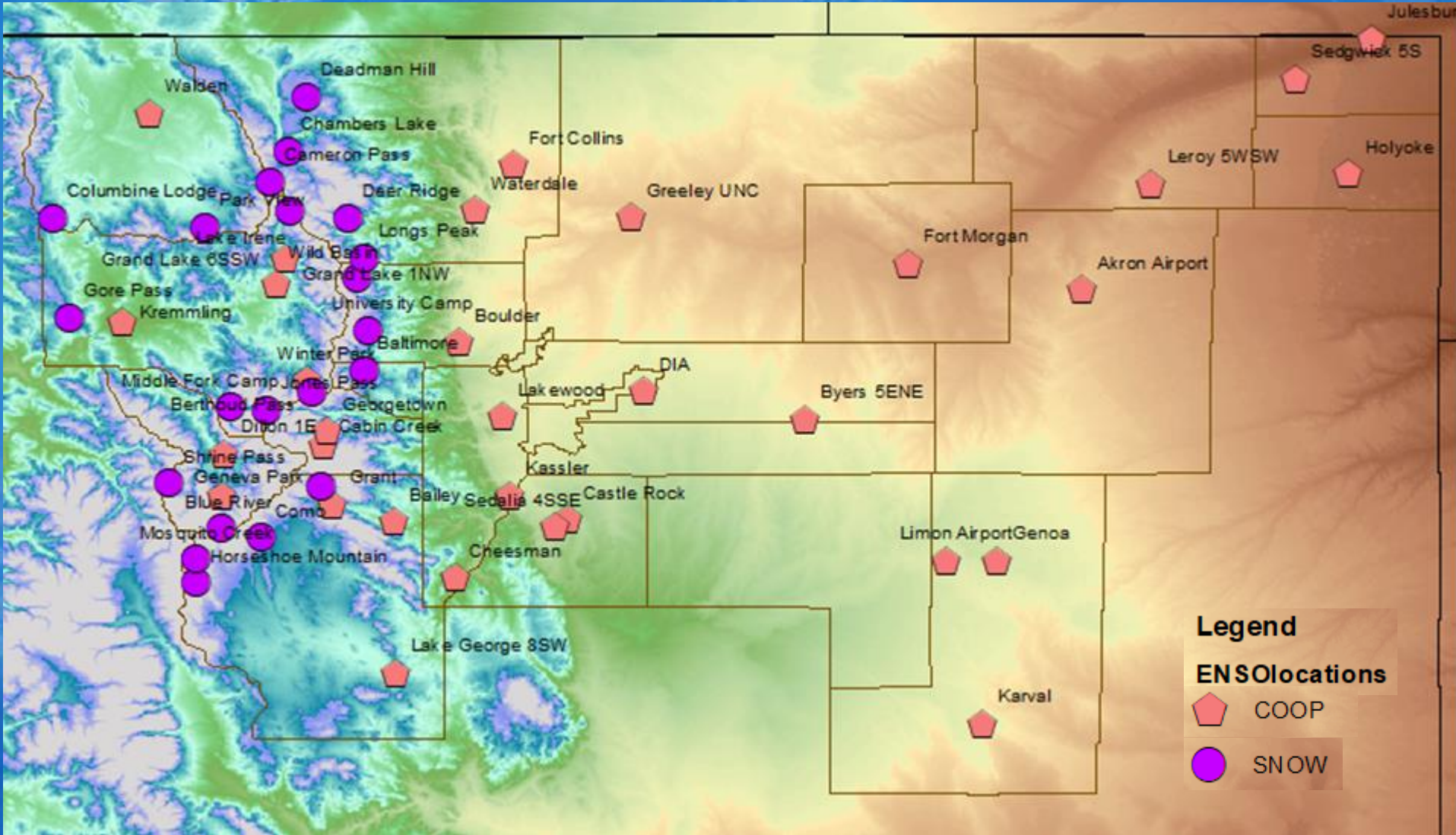




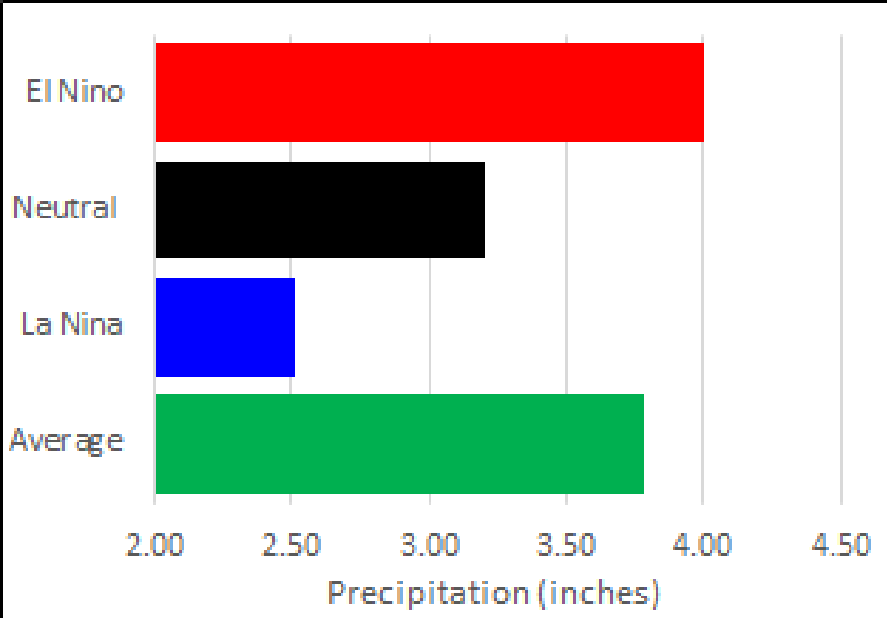
University Camp



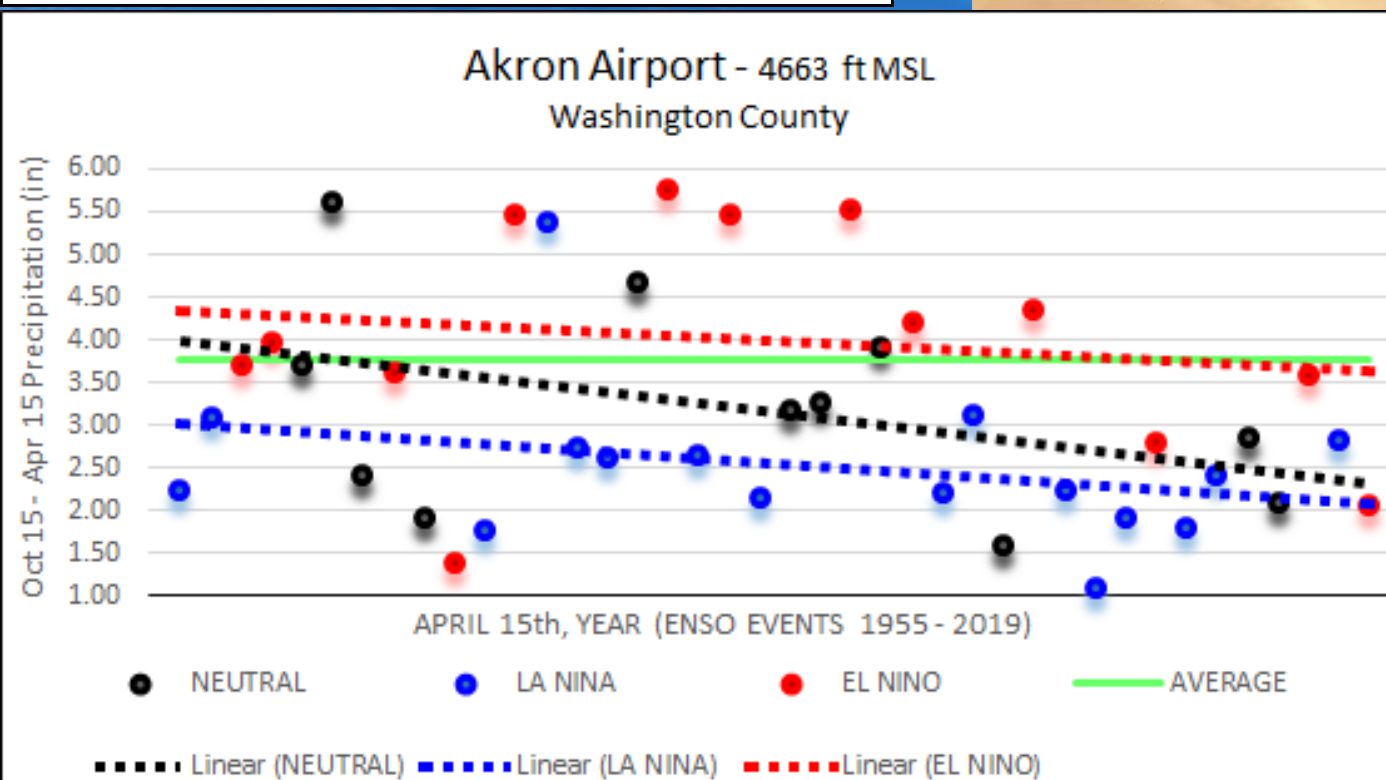


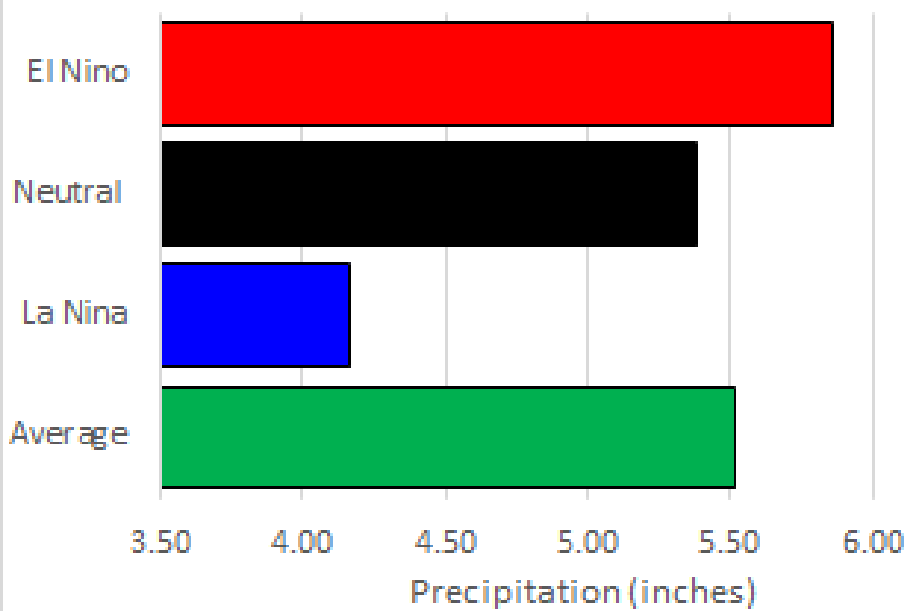


NWS Cooperative Observer &
Airport Precipitation:

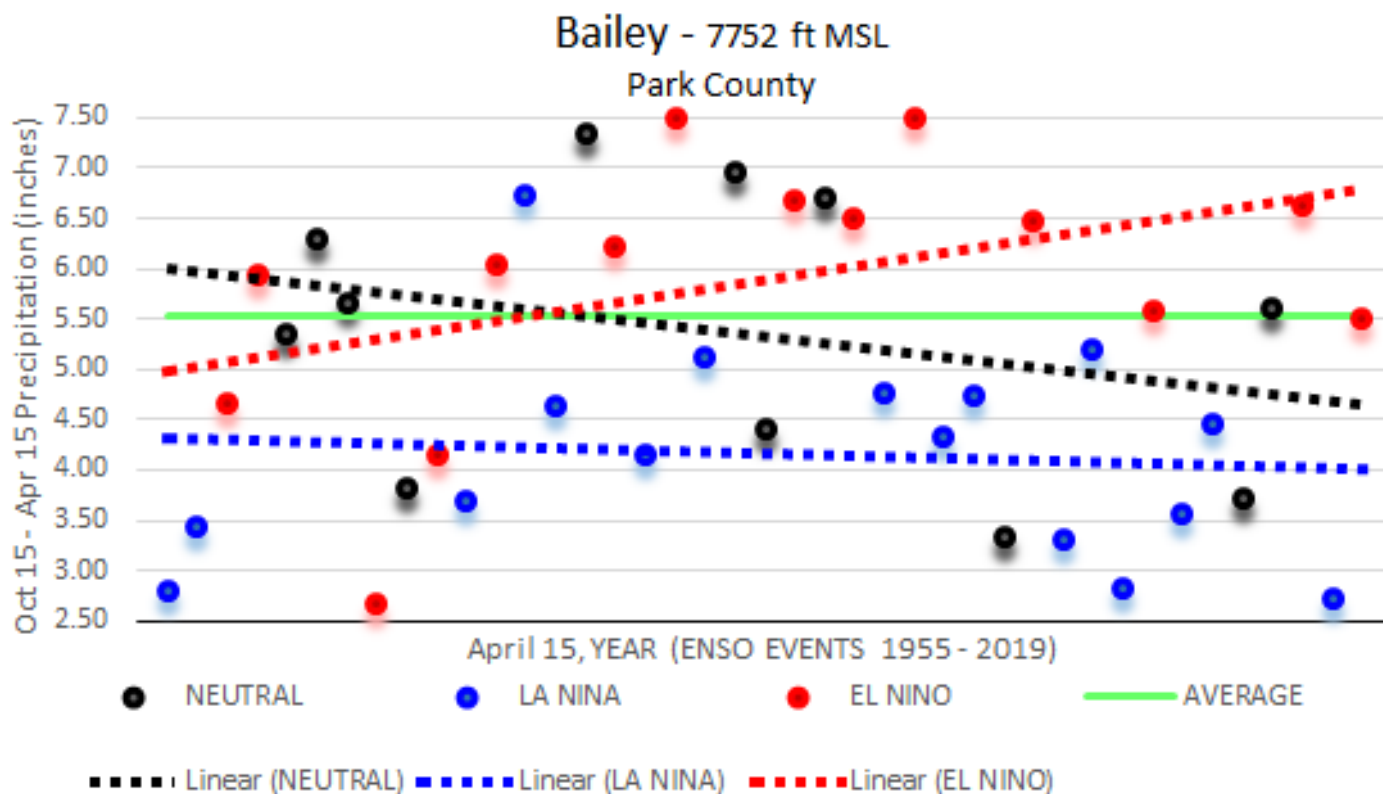
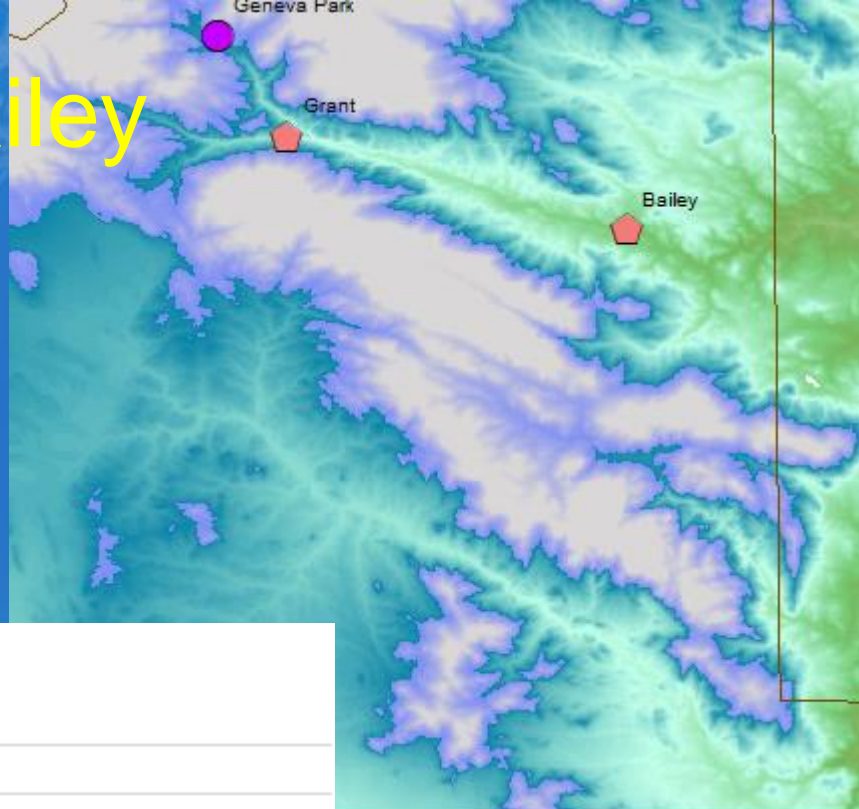


Akron Airport

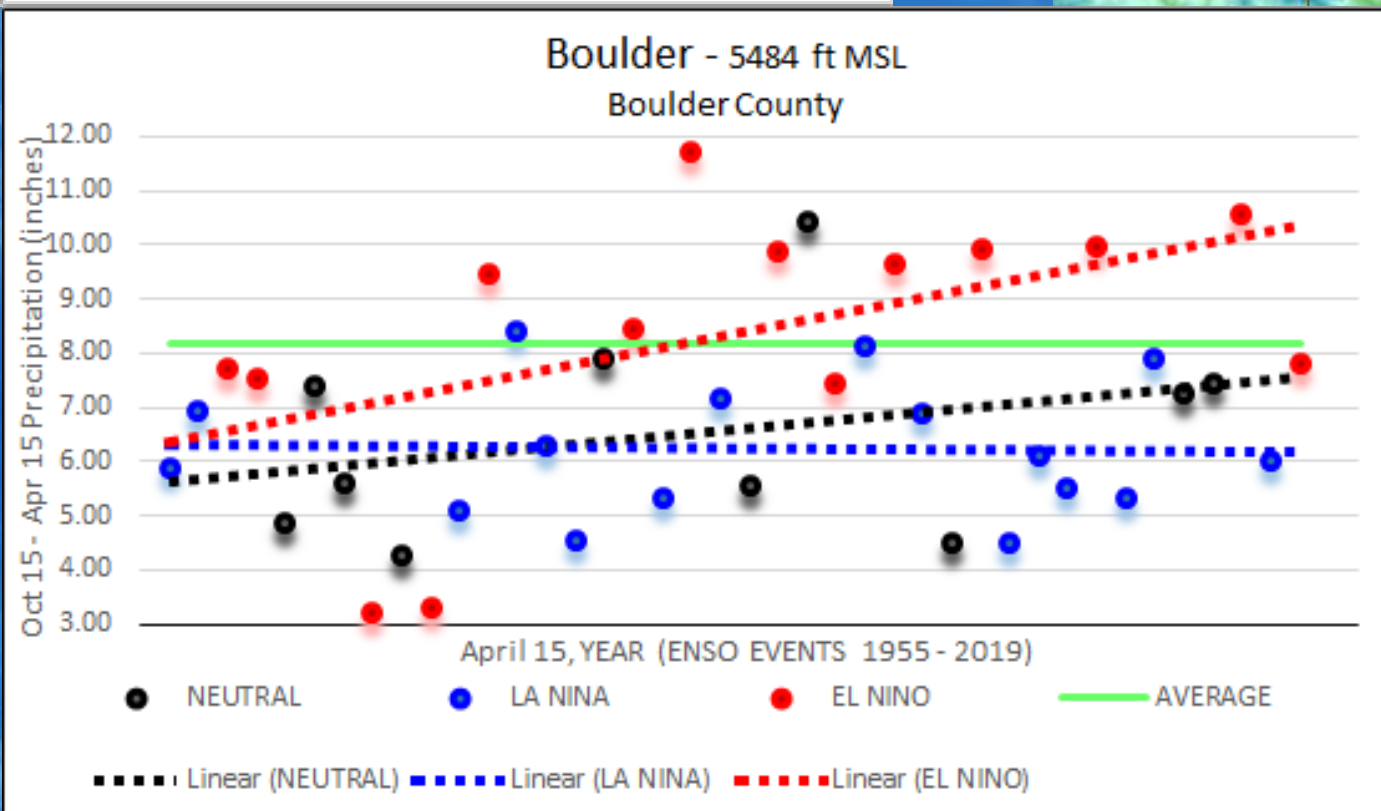
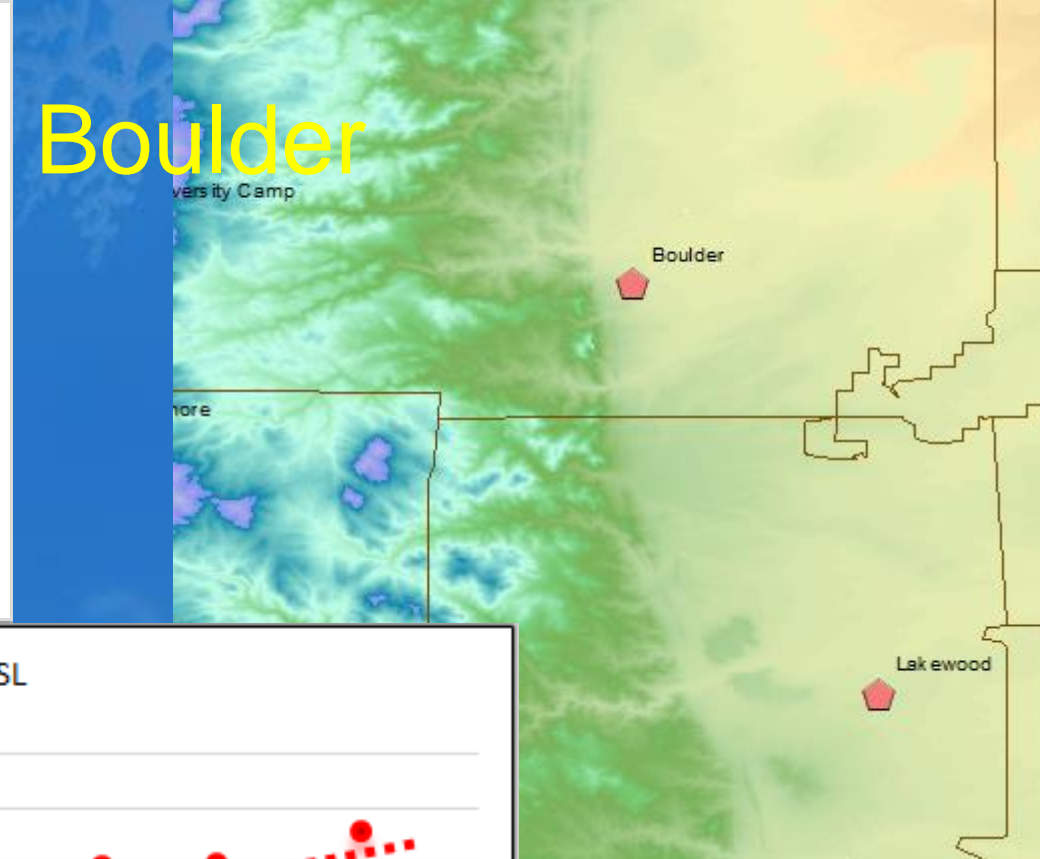
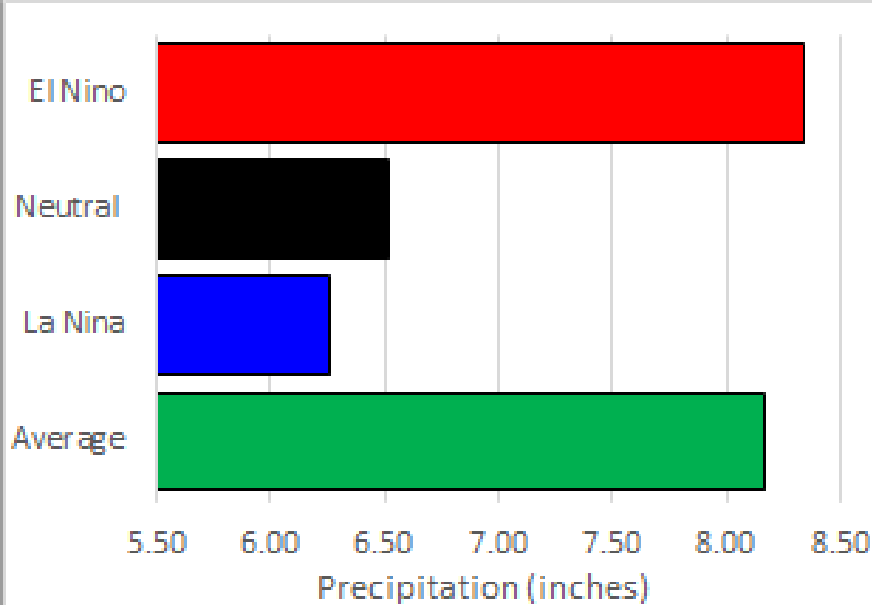


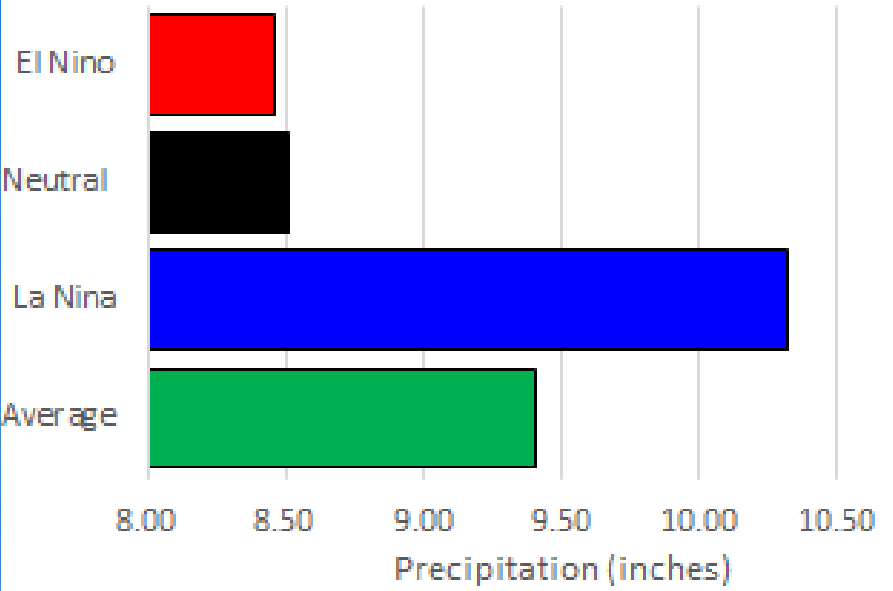


Bailey

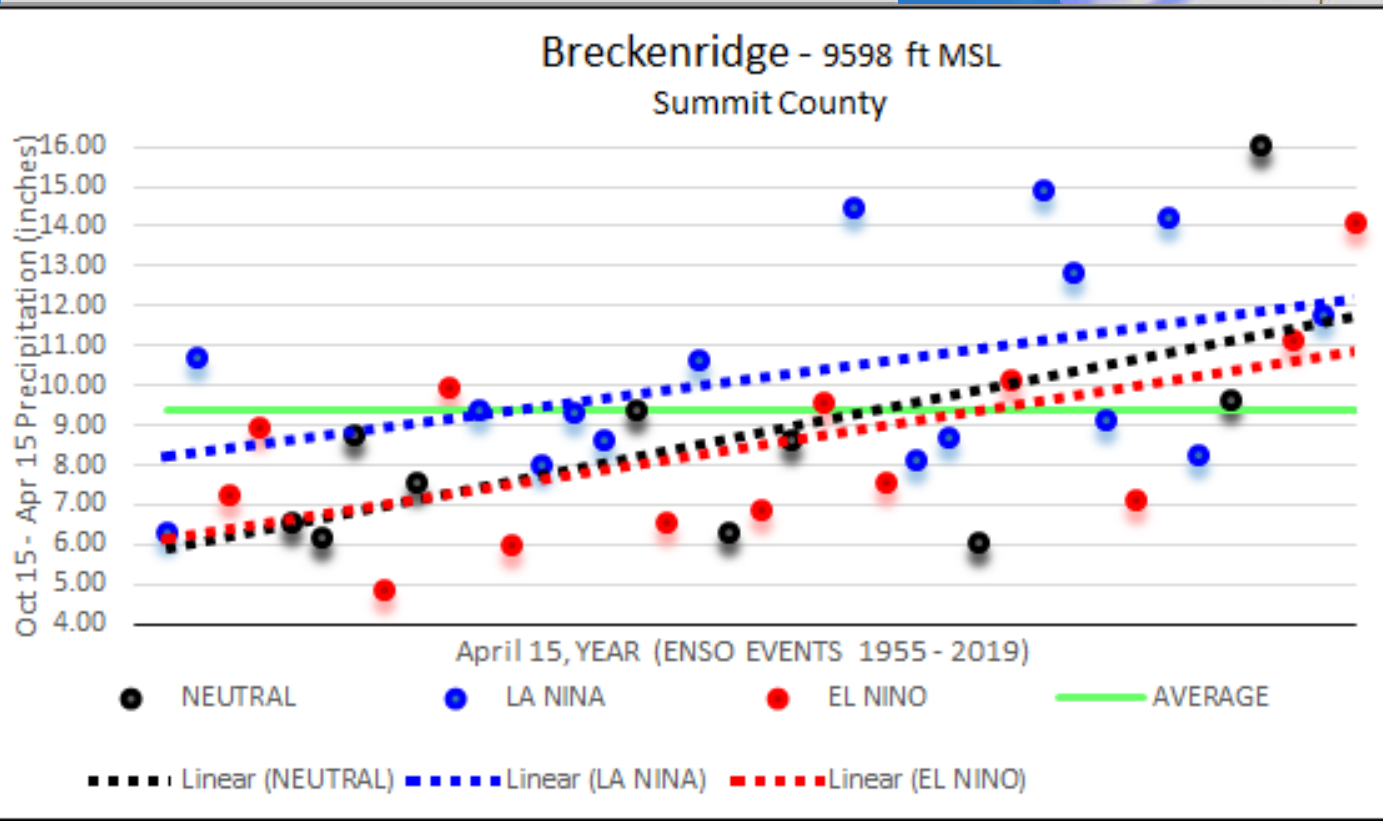
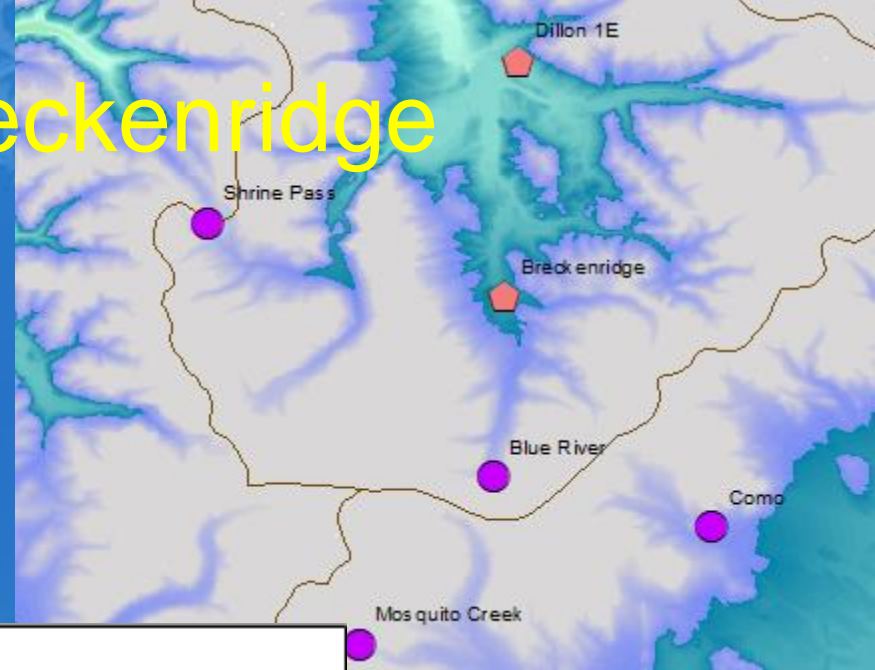


Boulder

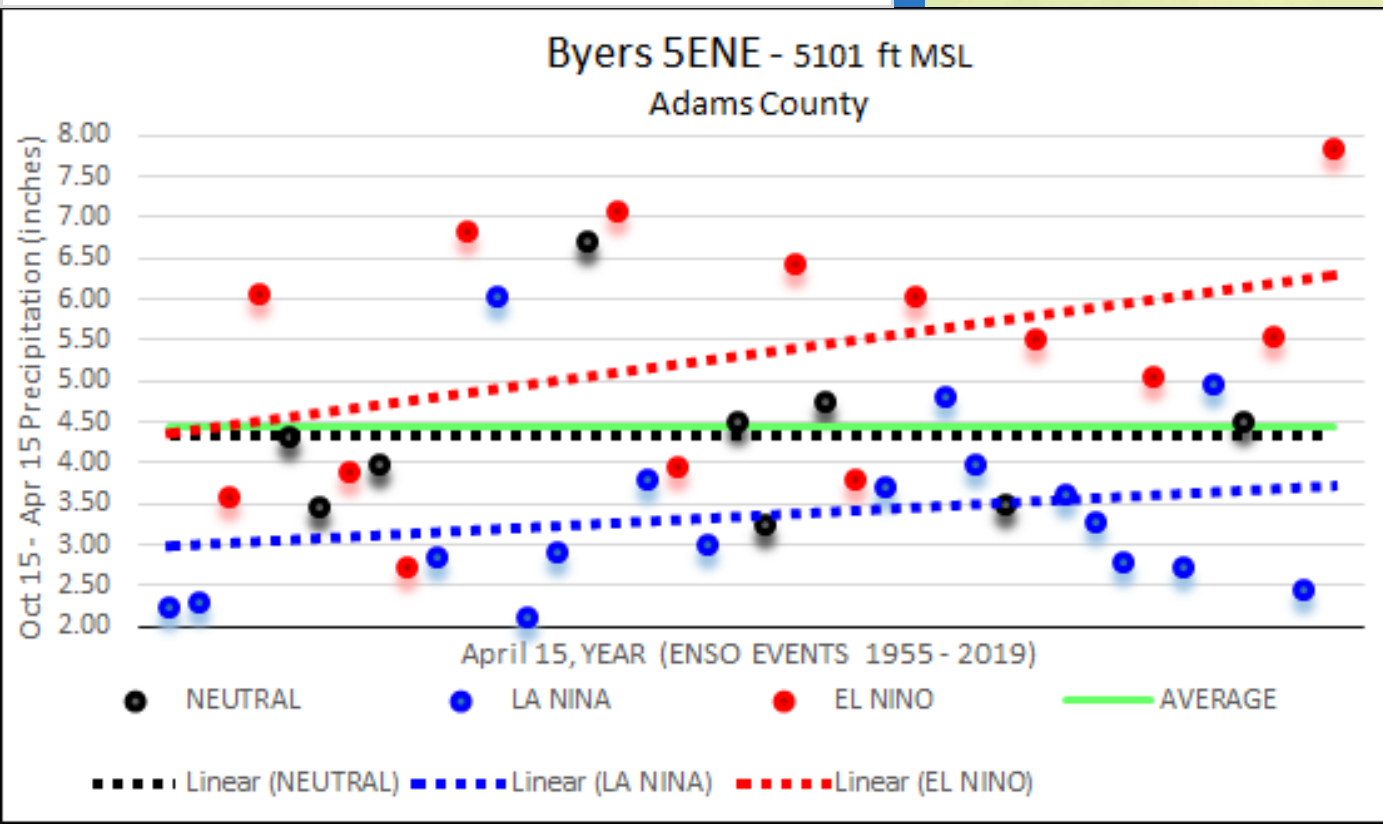
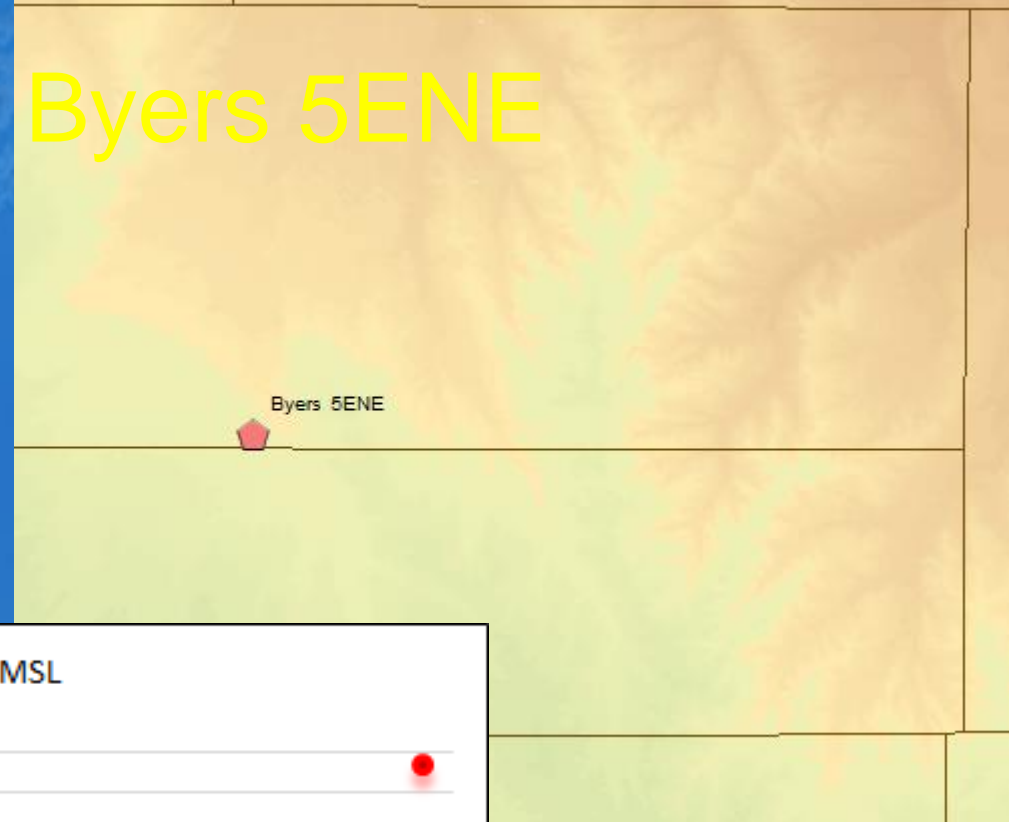
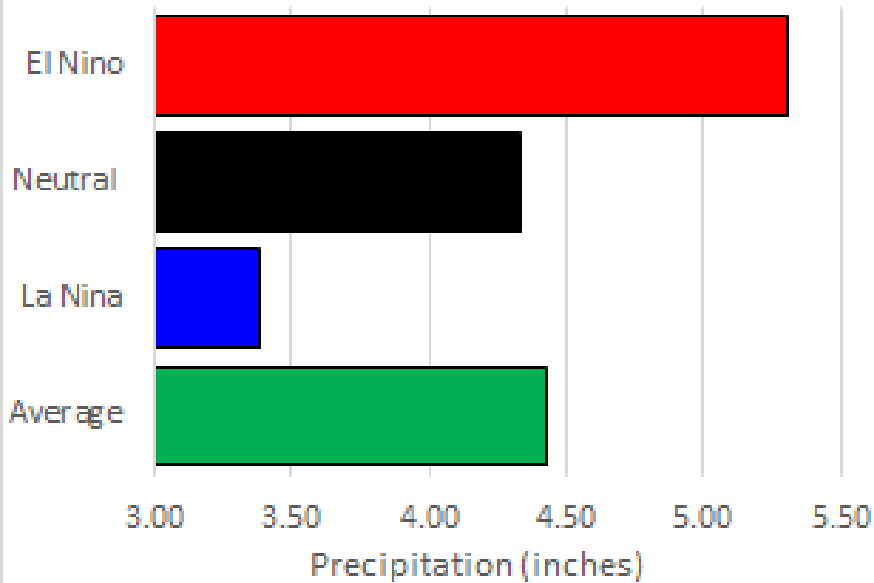


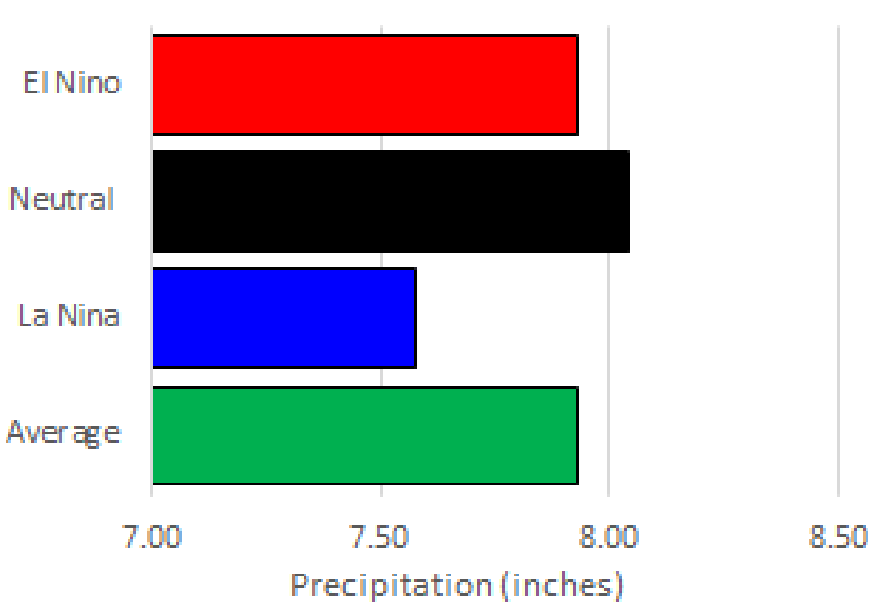


Breckenridge

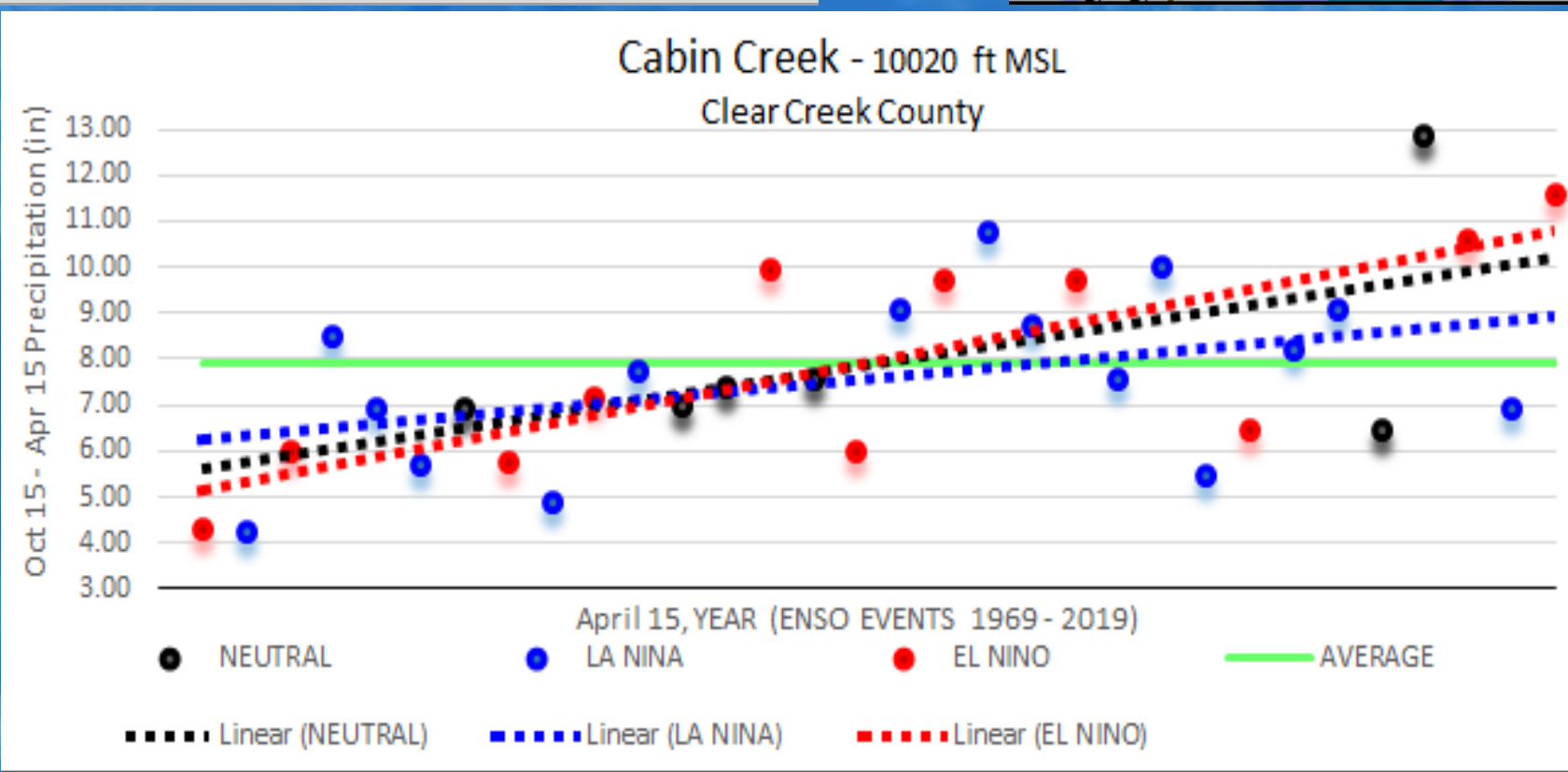
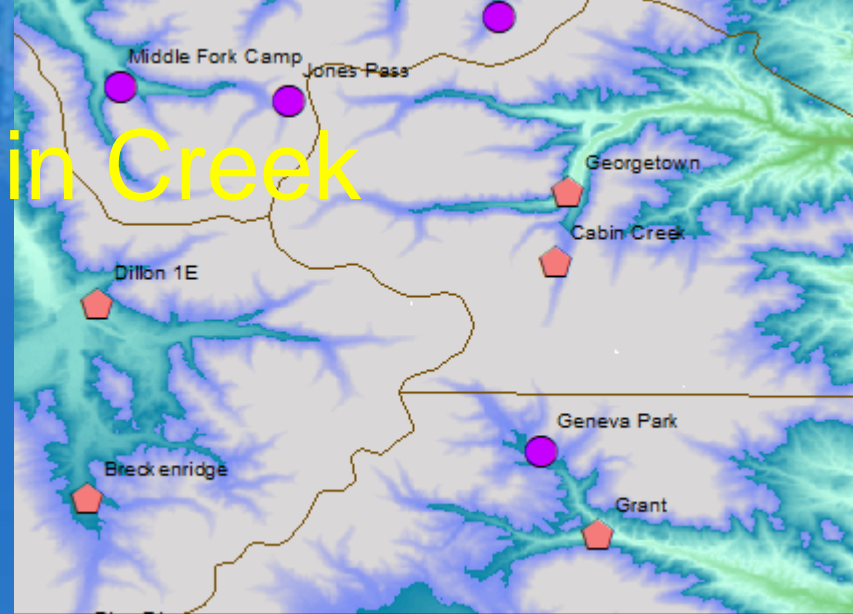


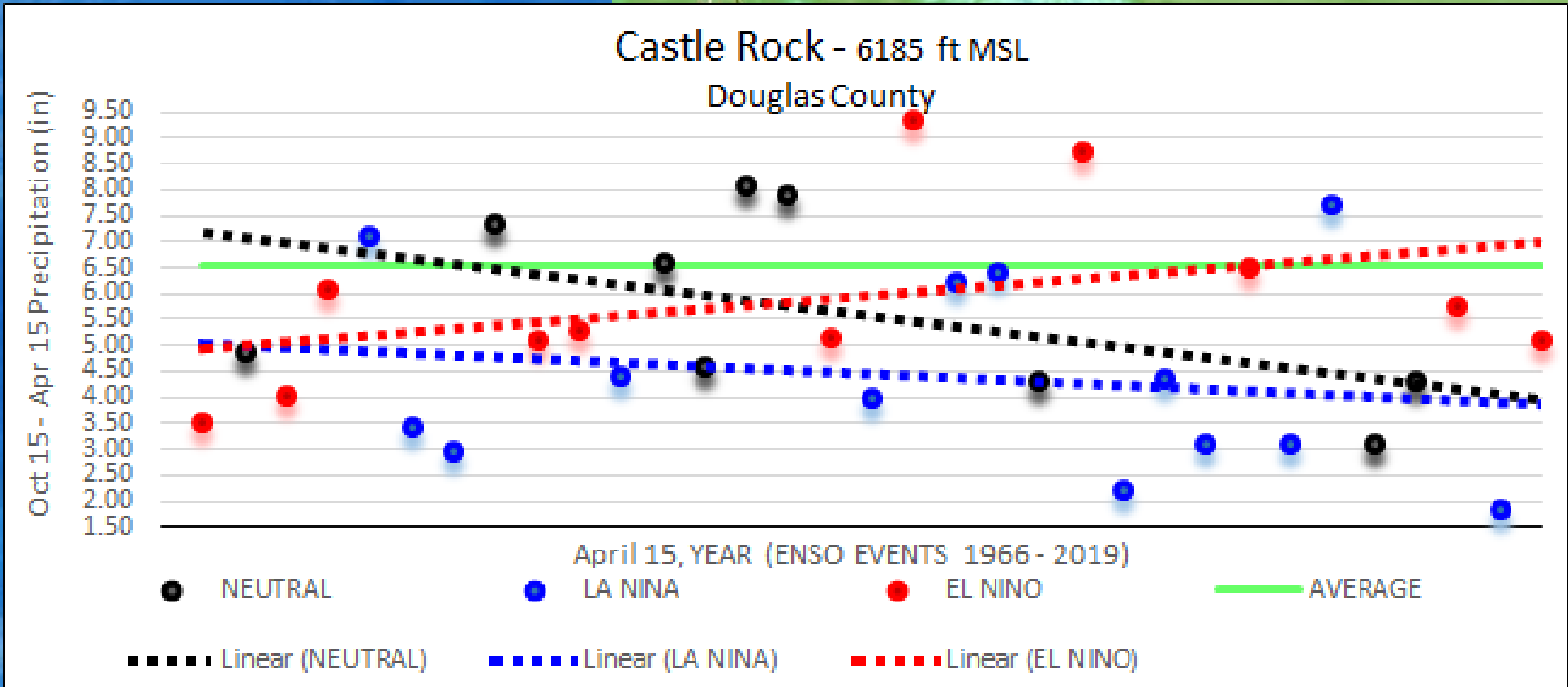
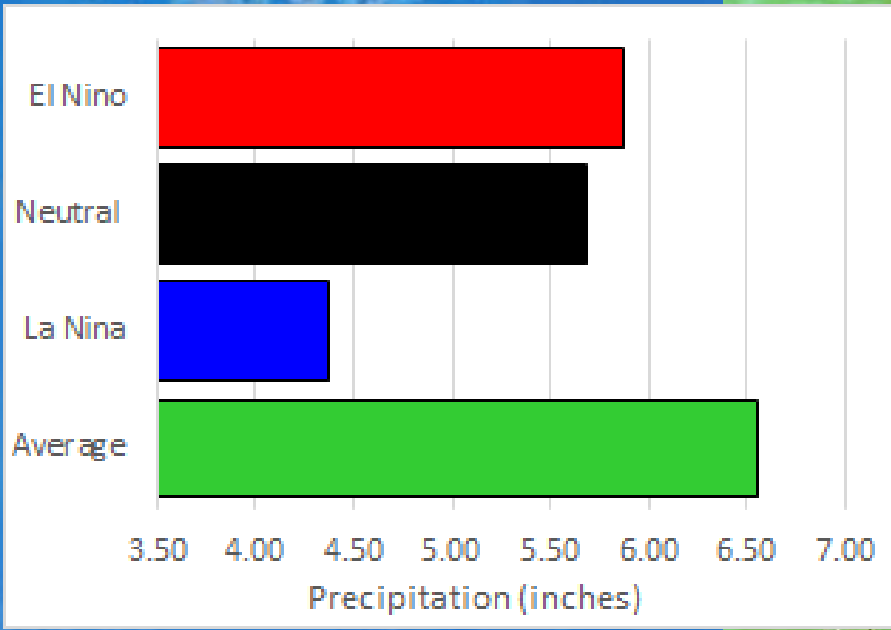
Byers 5ENE

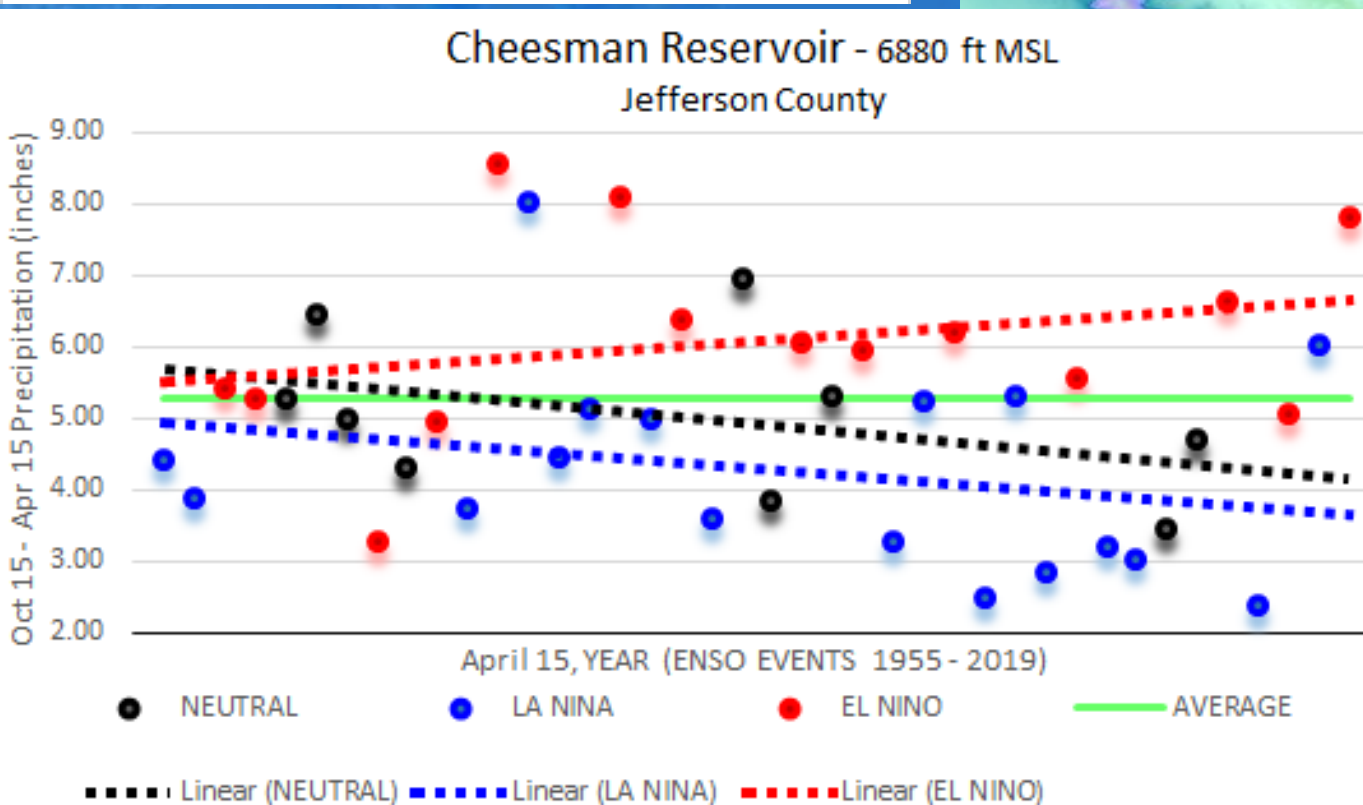
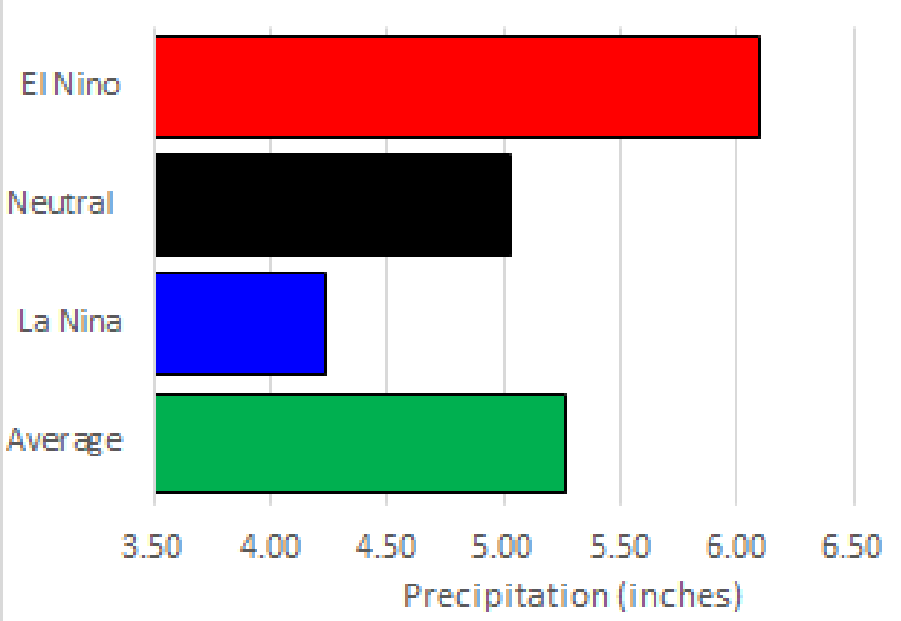


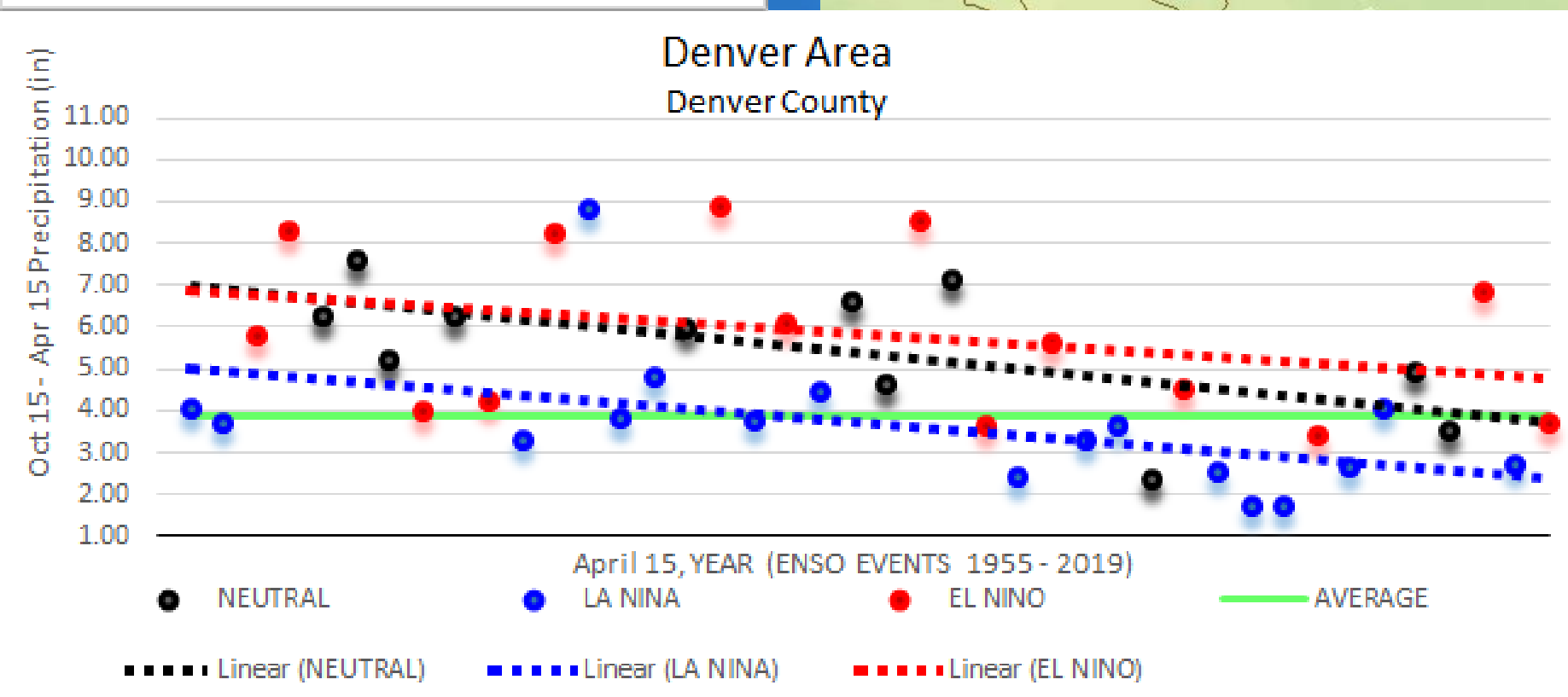
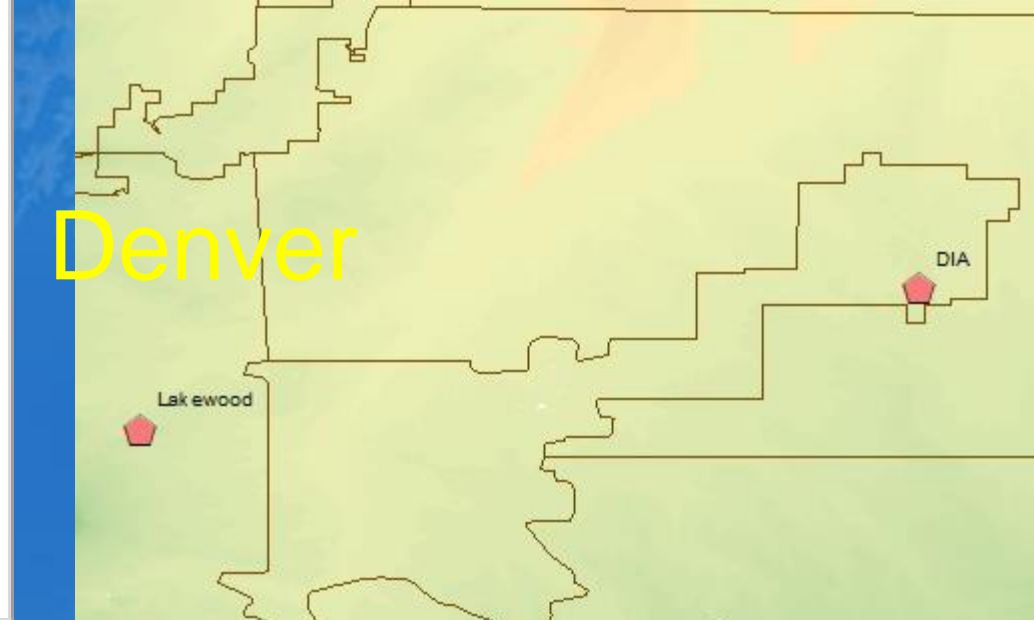
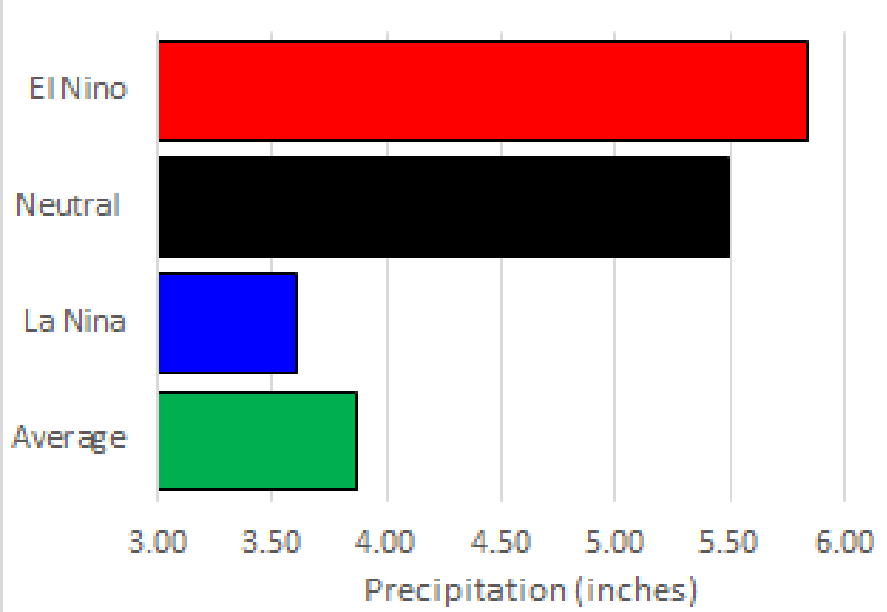


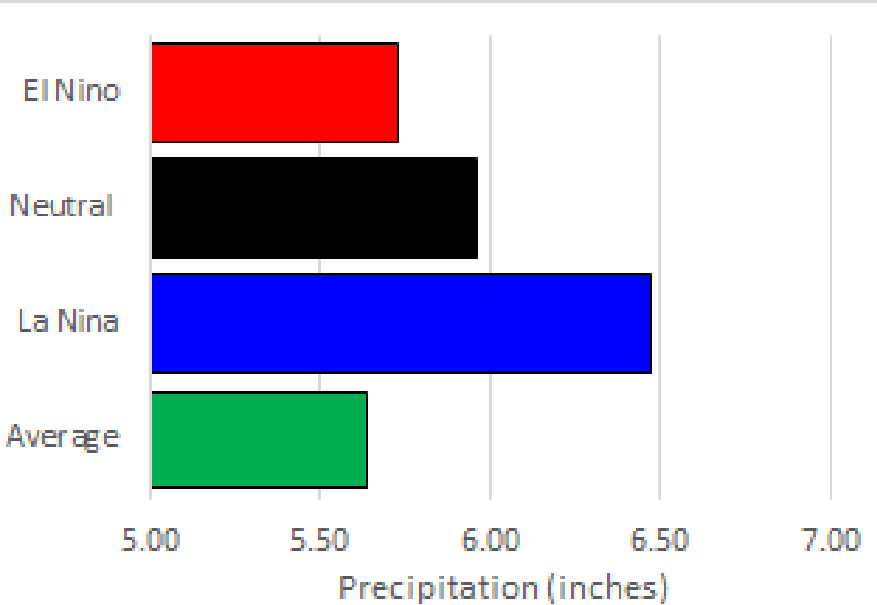
Cabin Creek



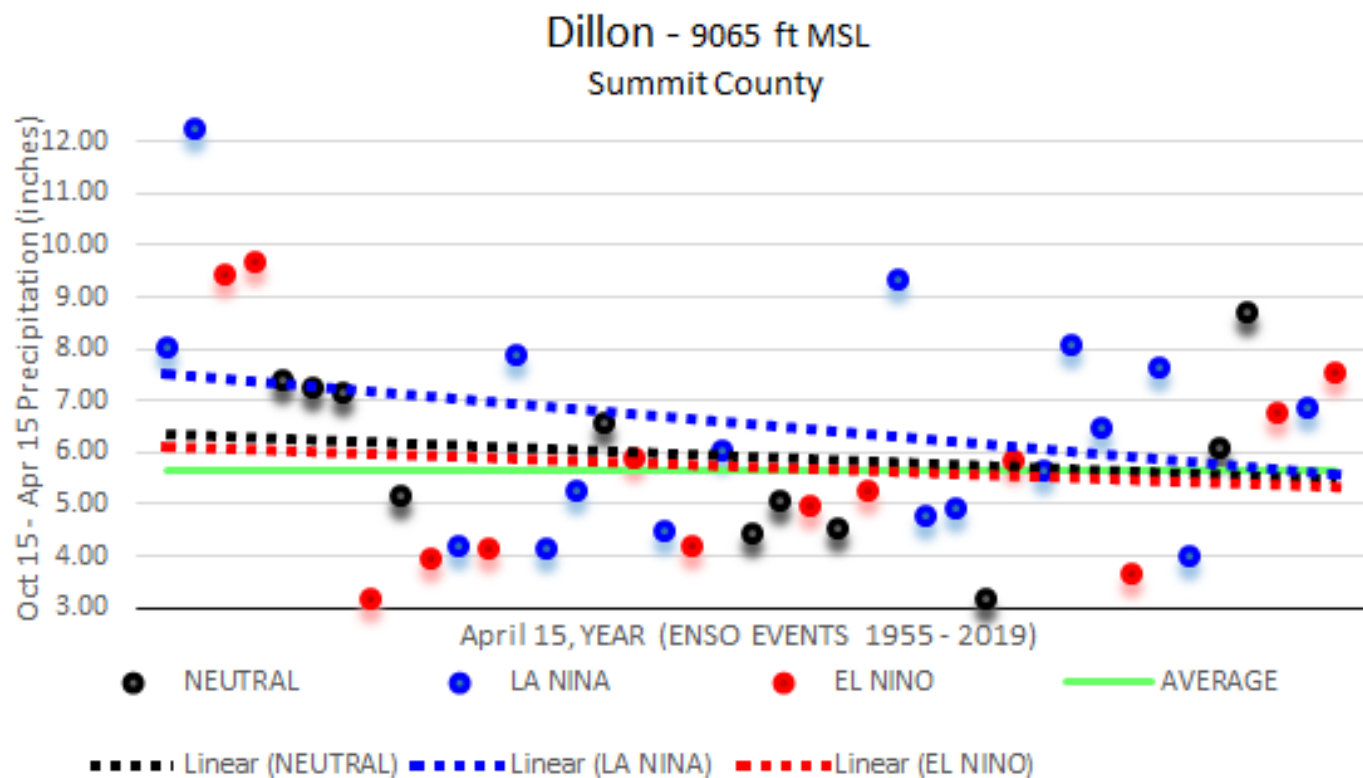
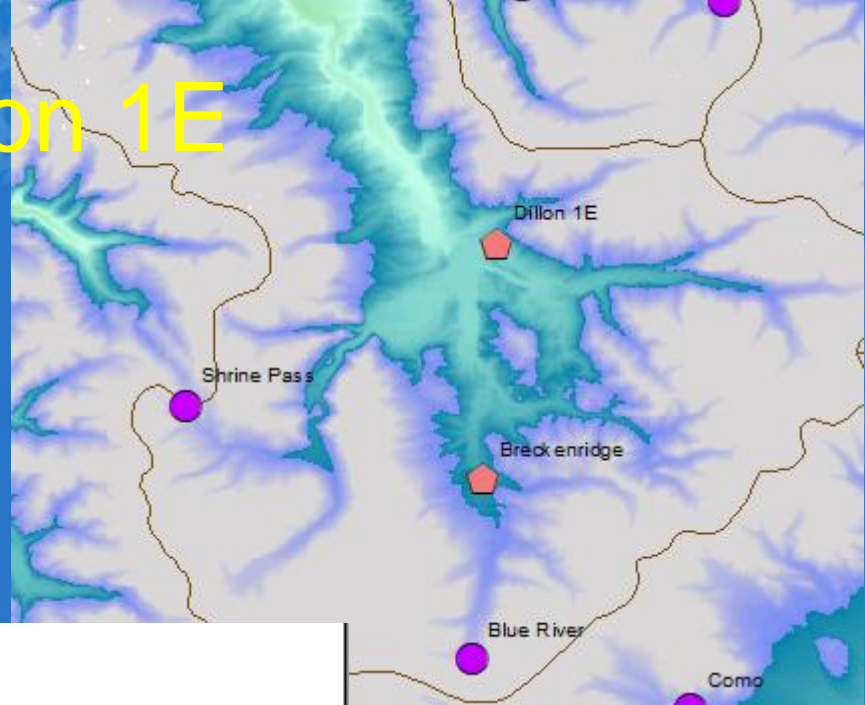


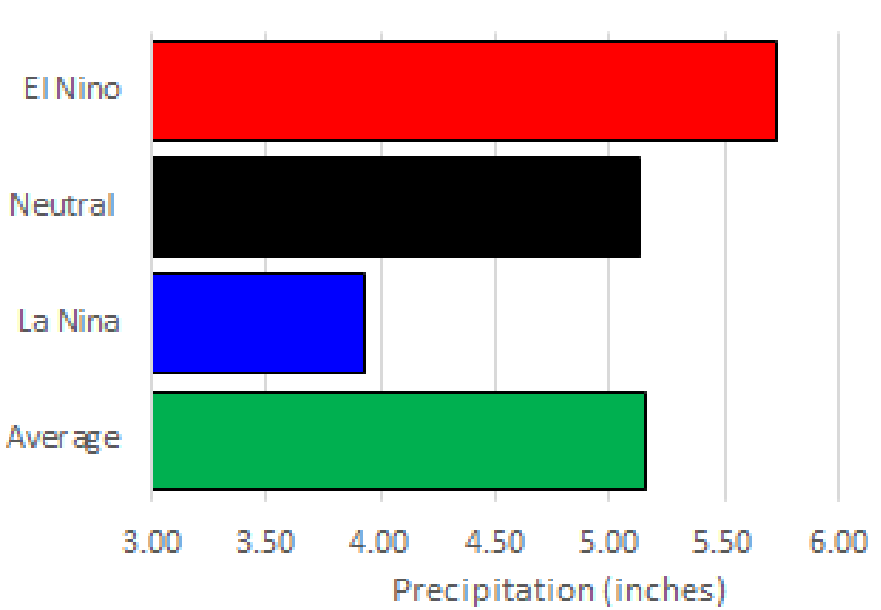




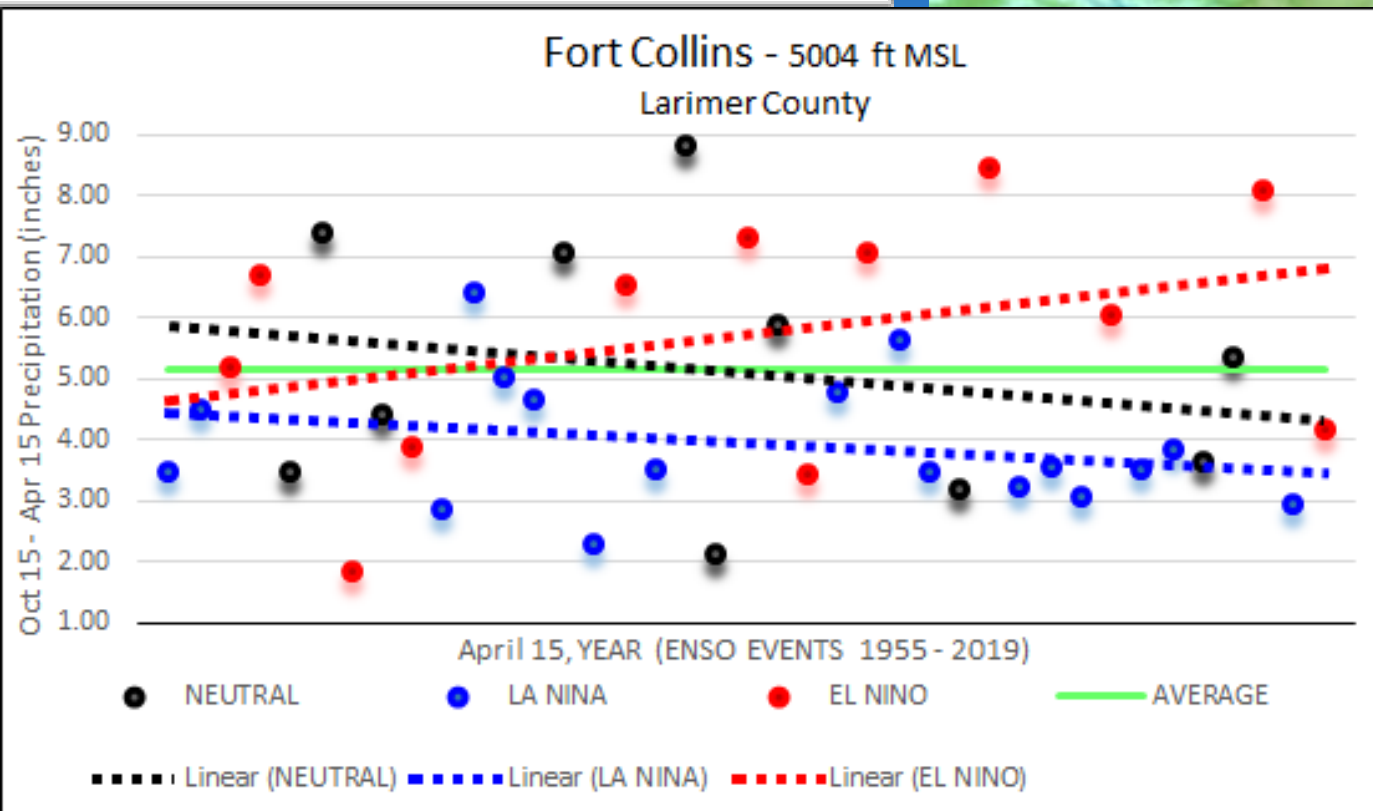
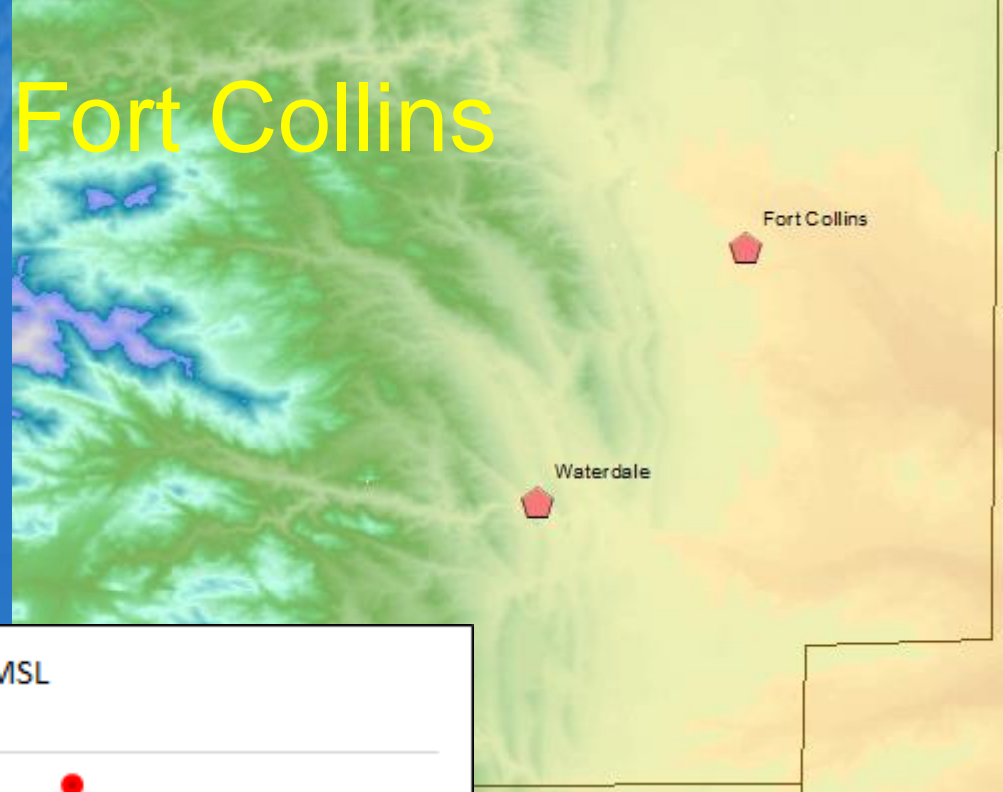


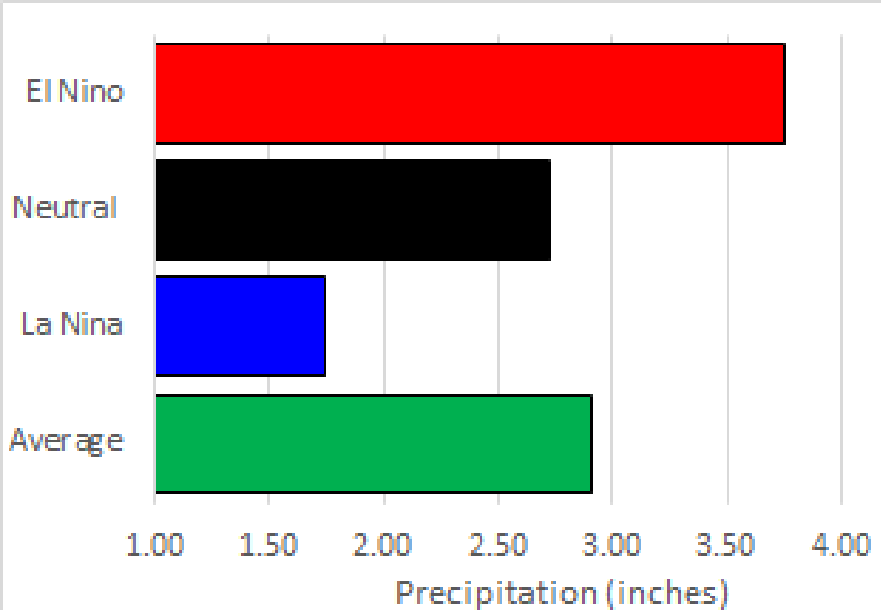
Dillon 1E





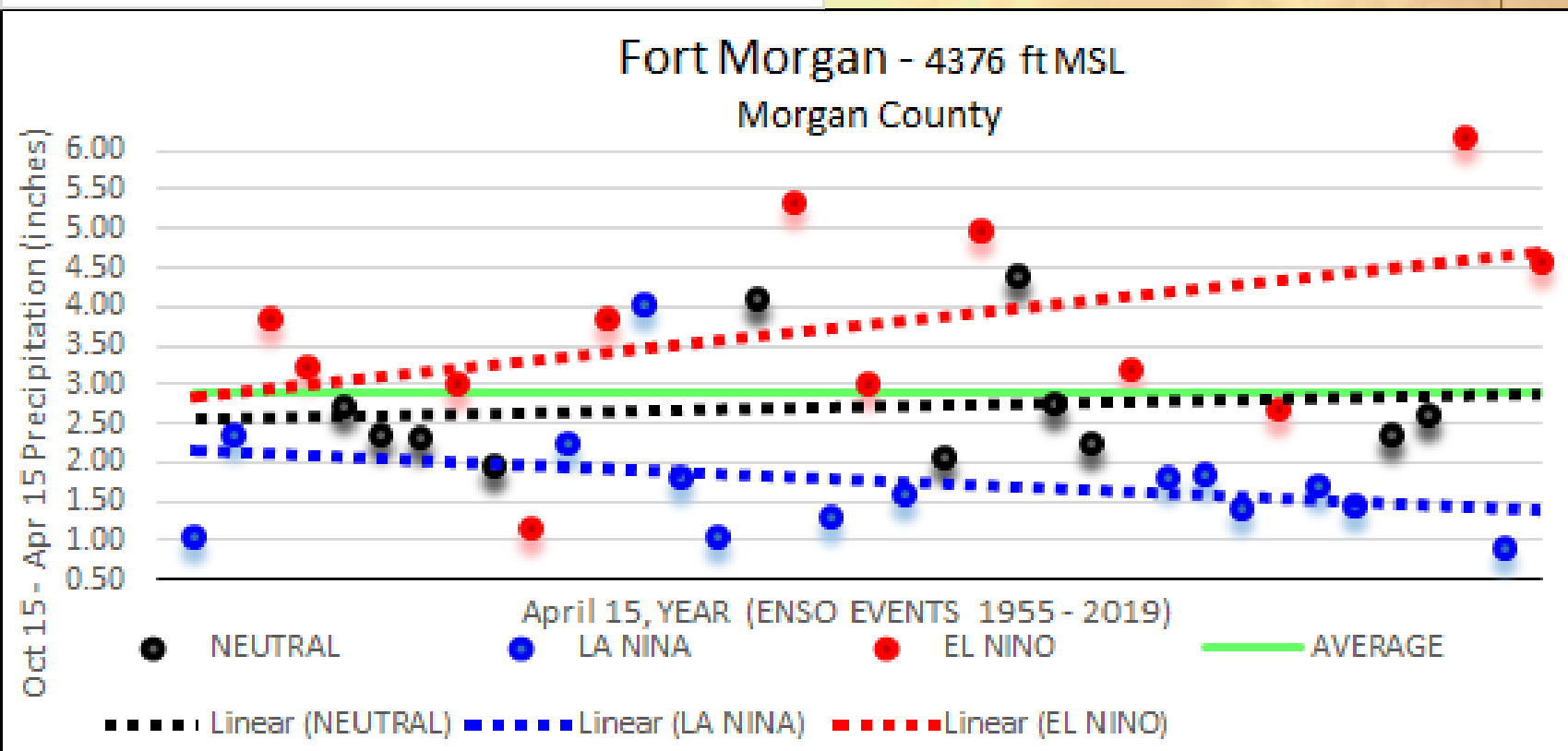
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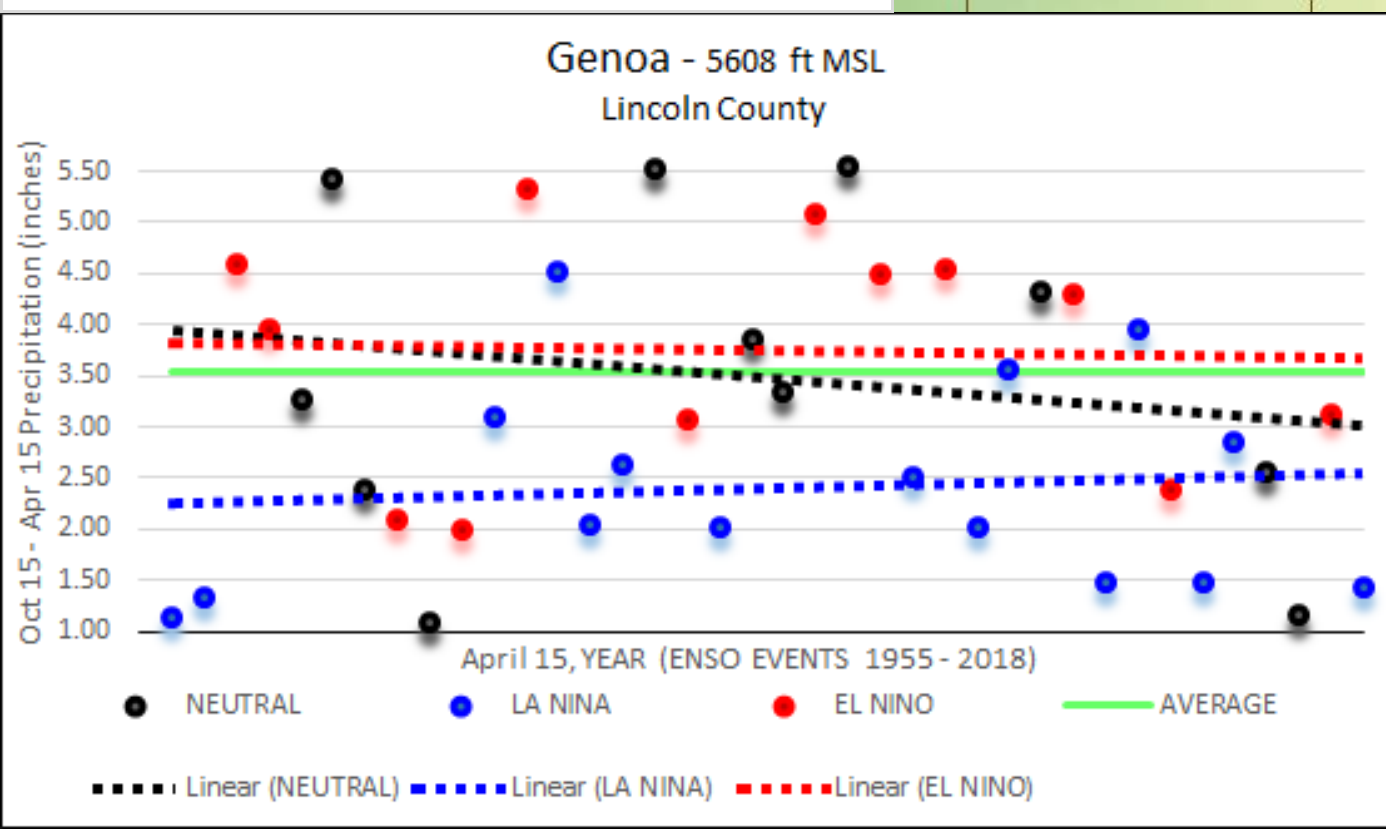
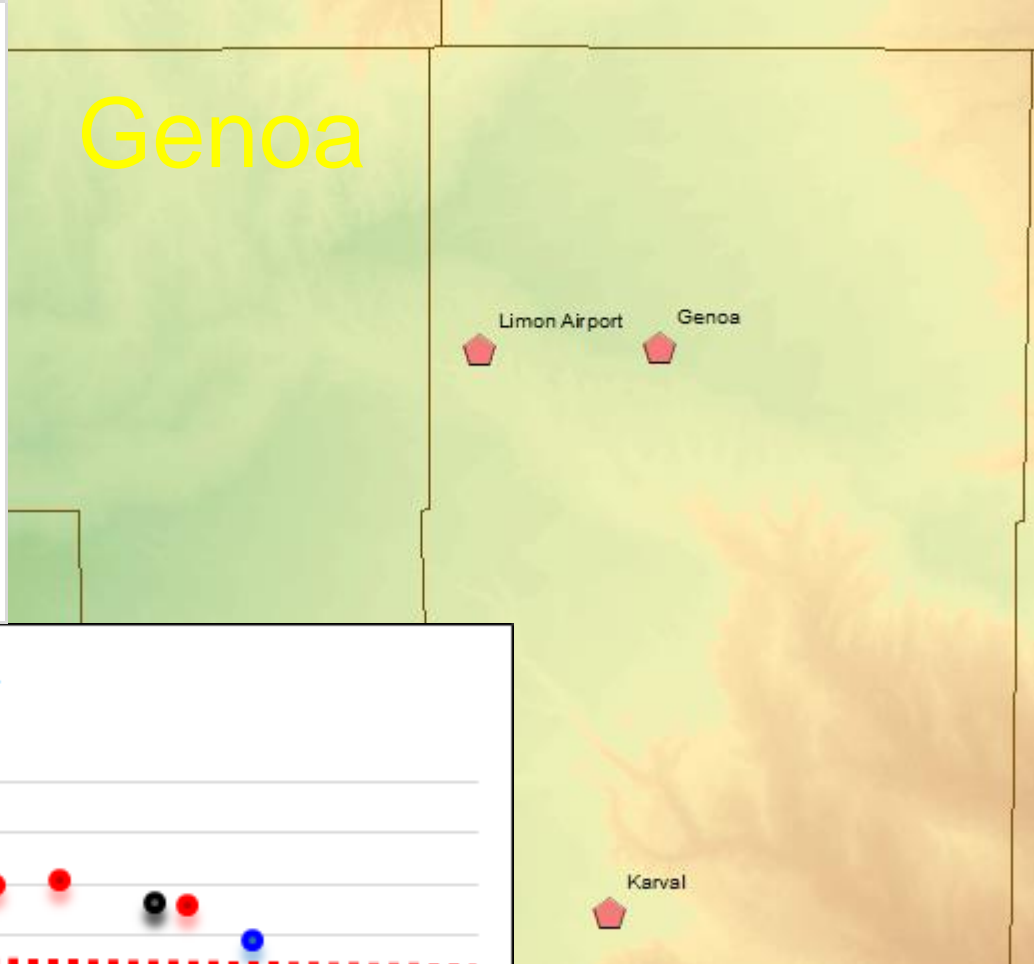
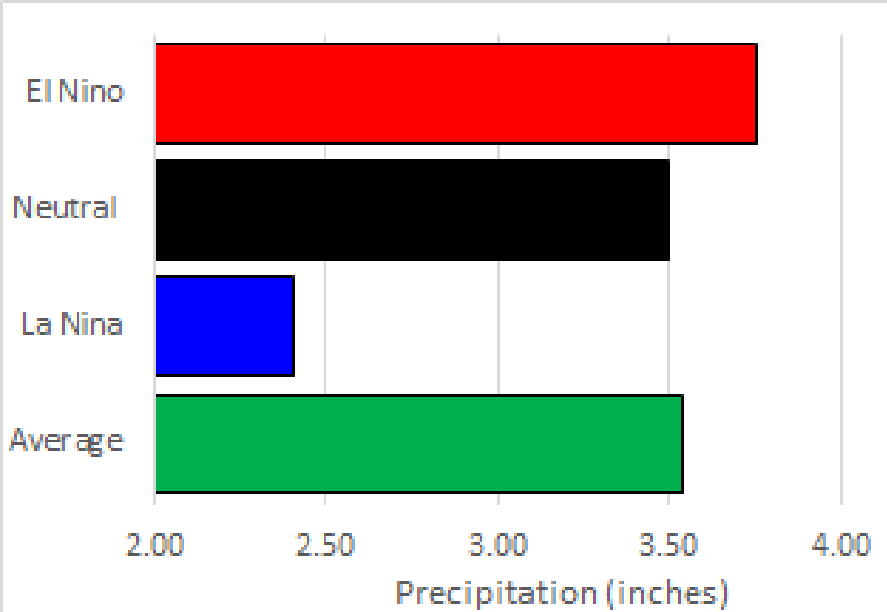


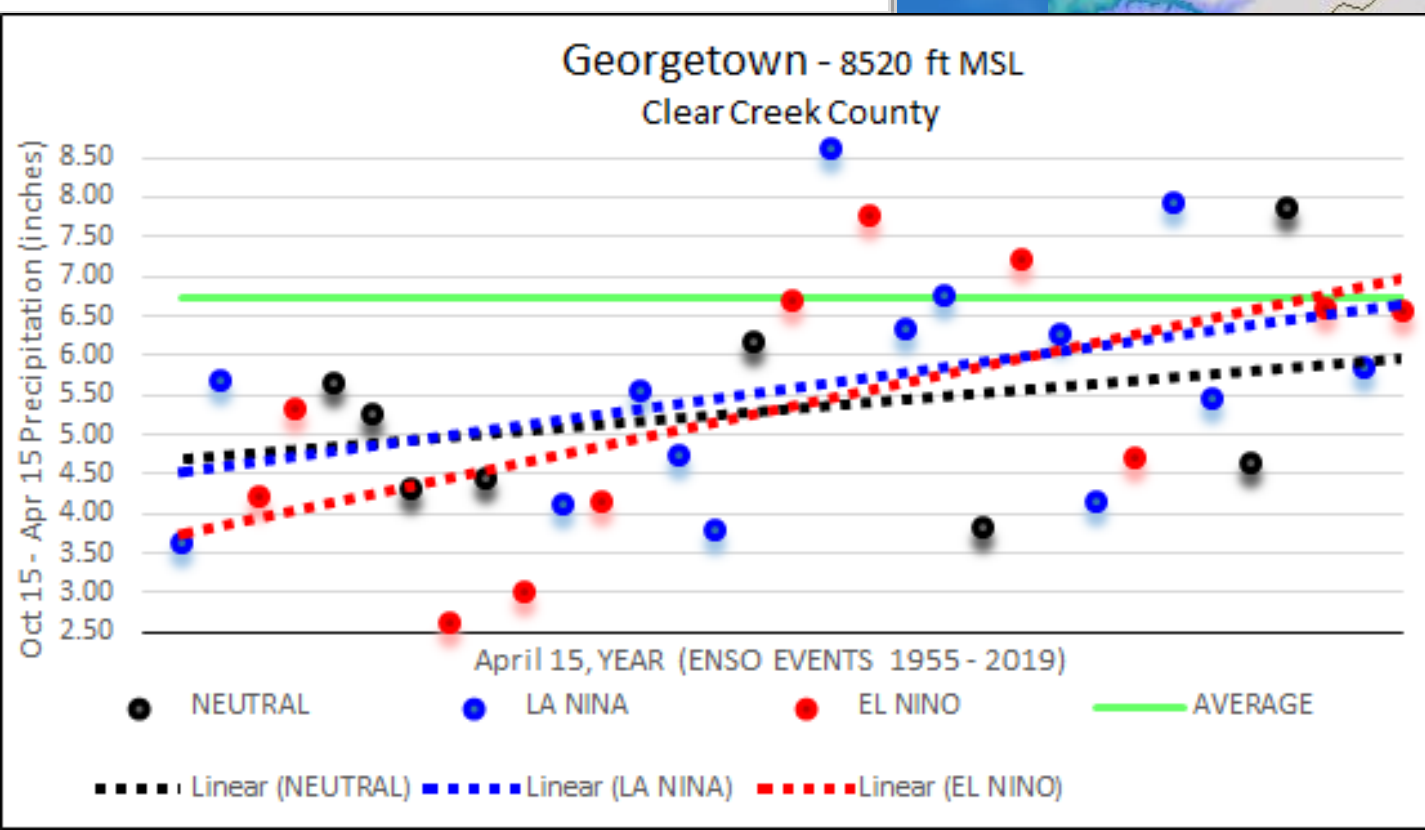
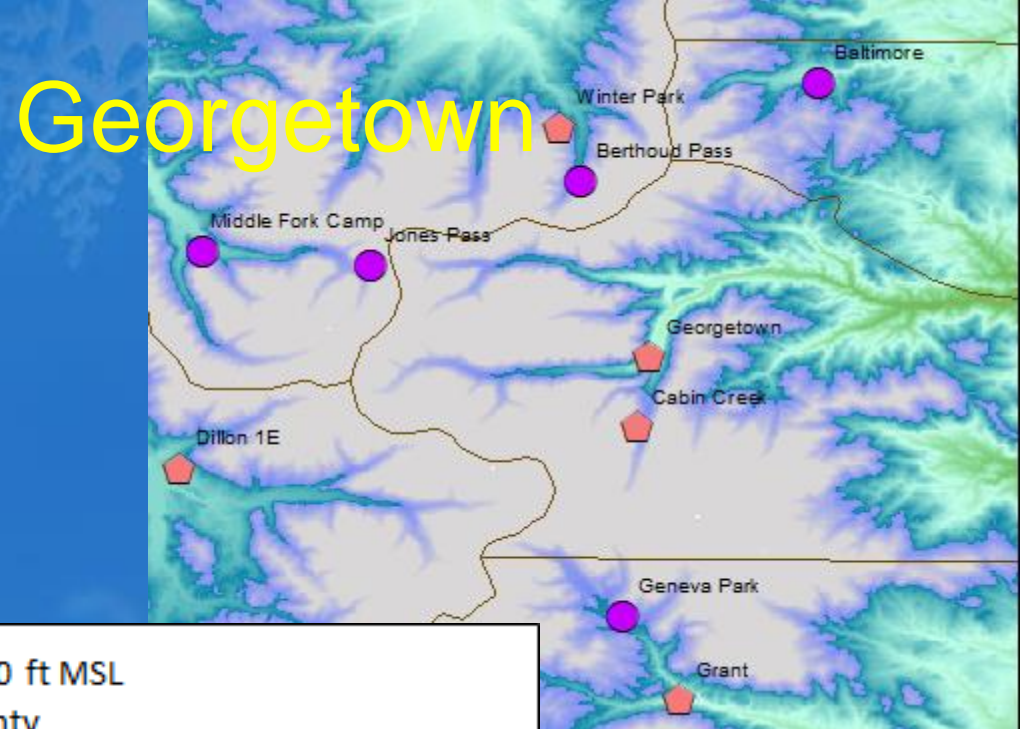
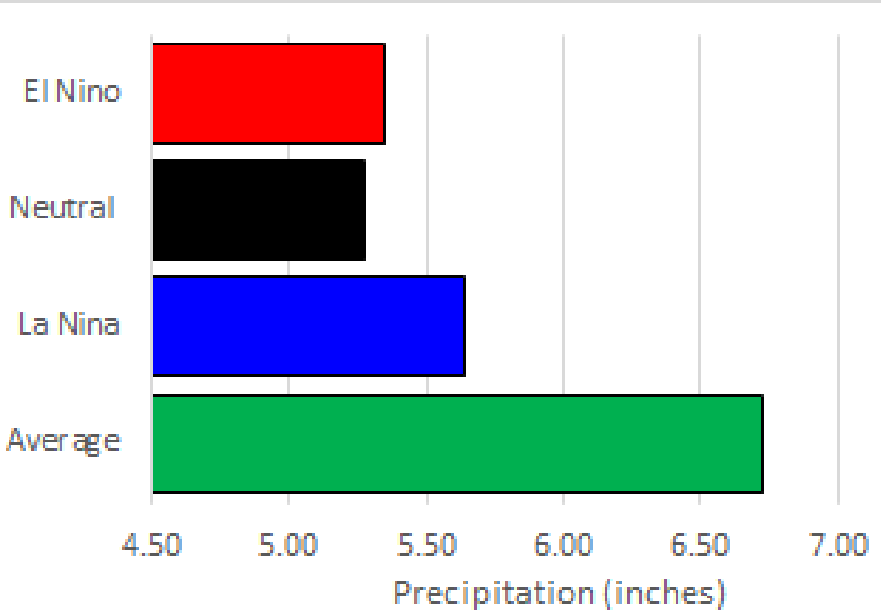


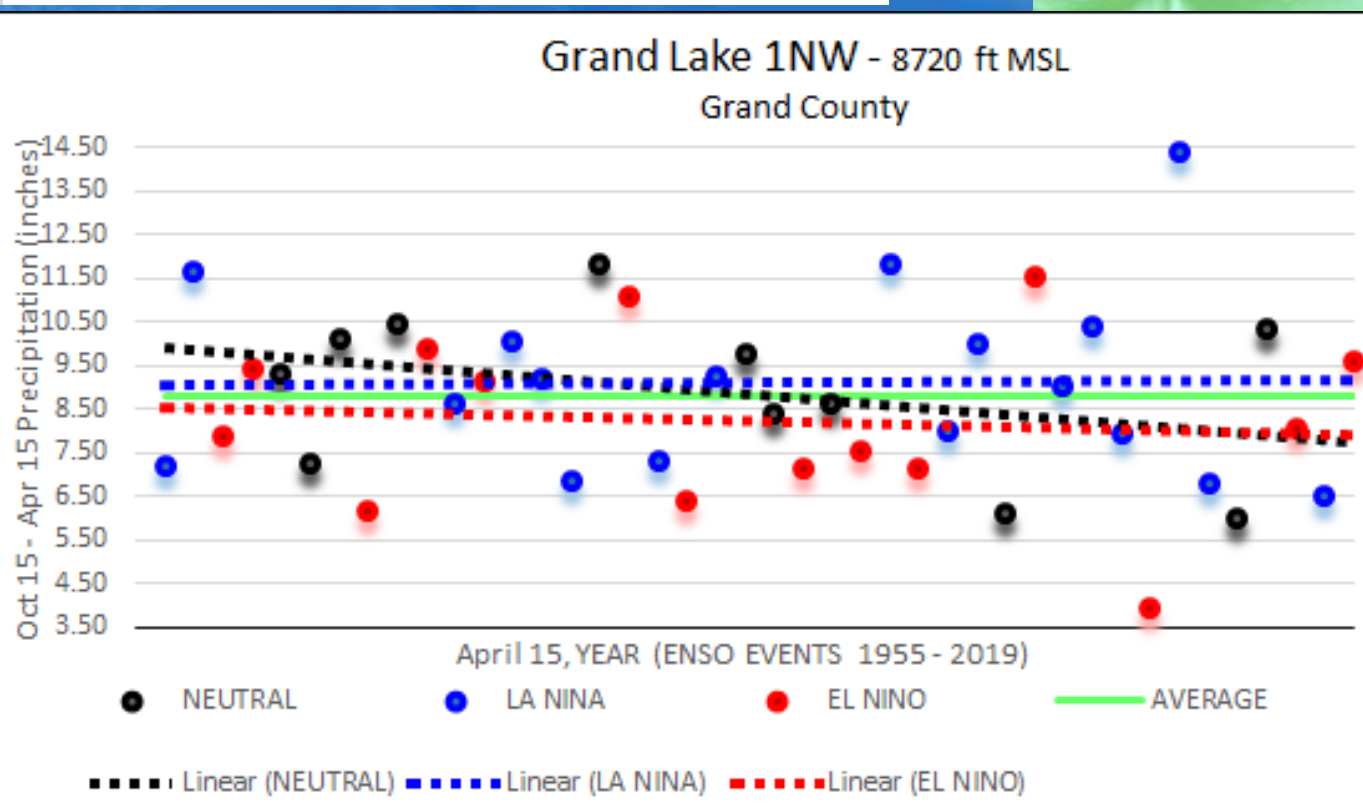
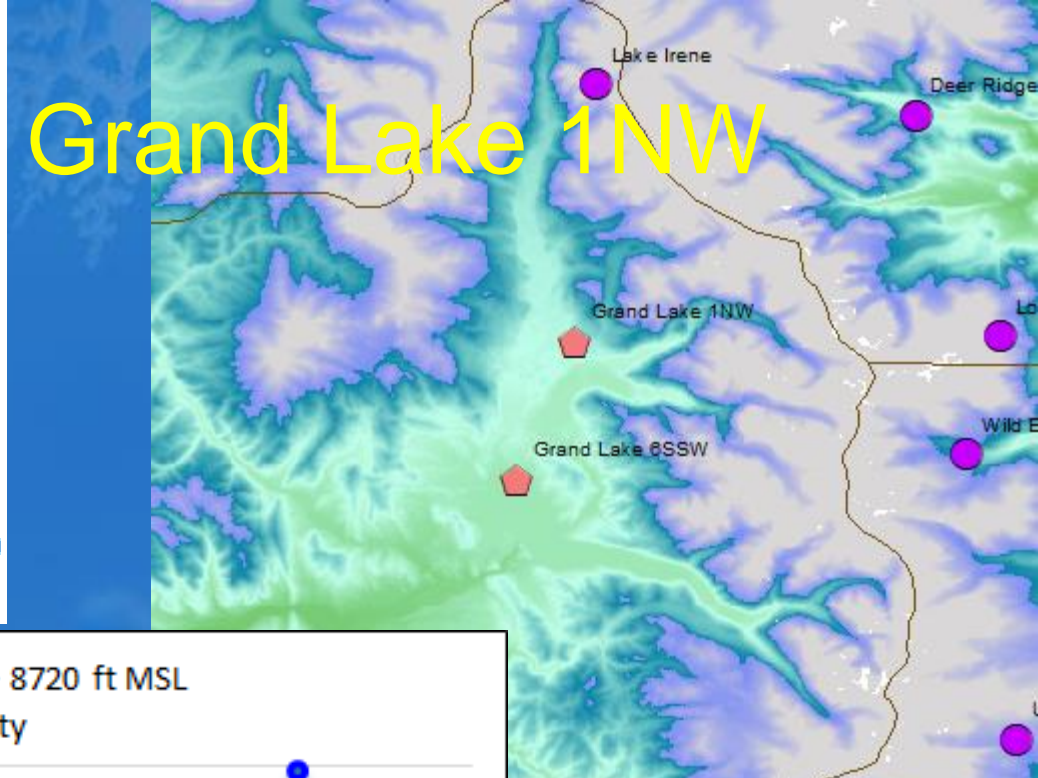
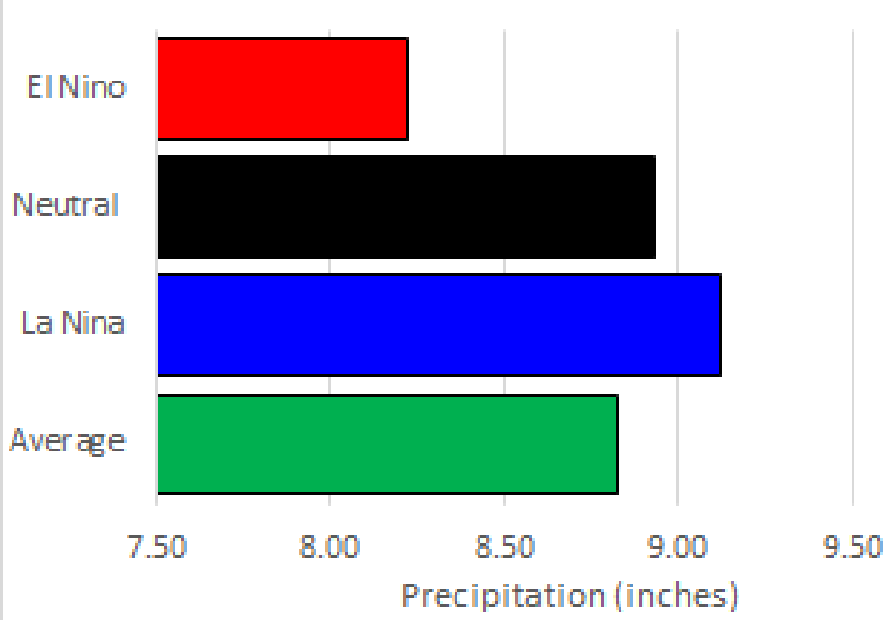
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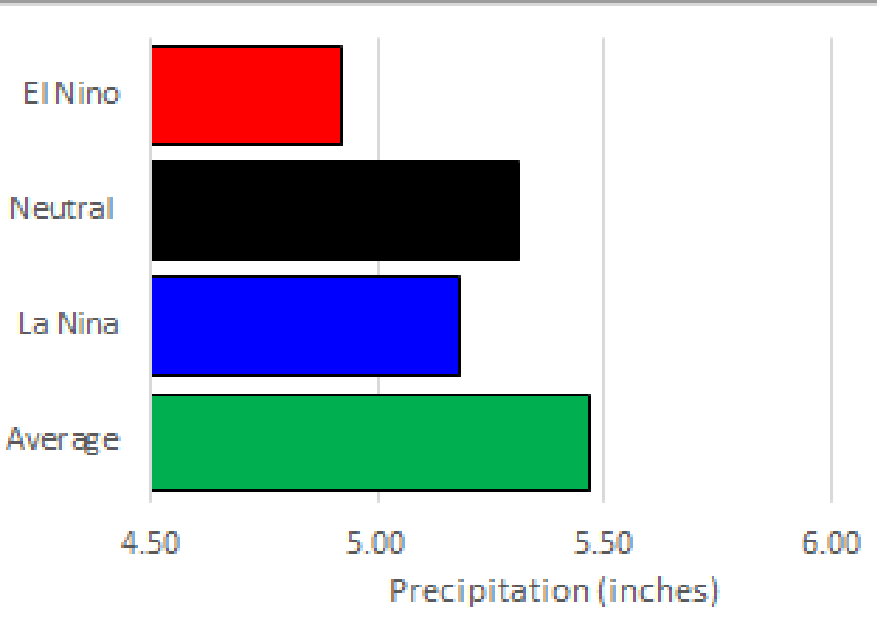
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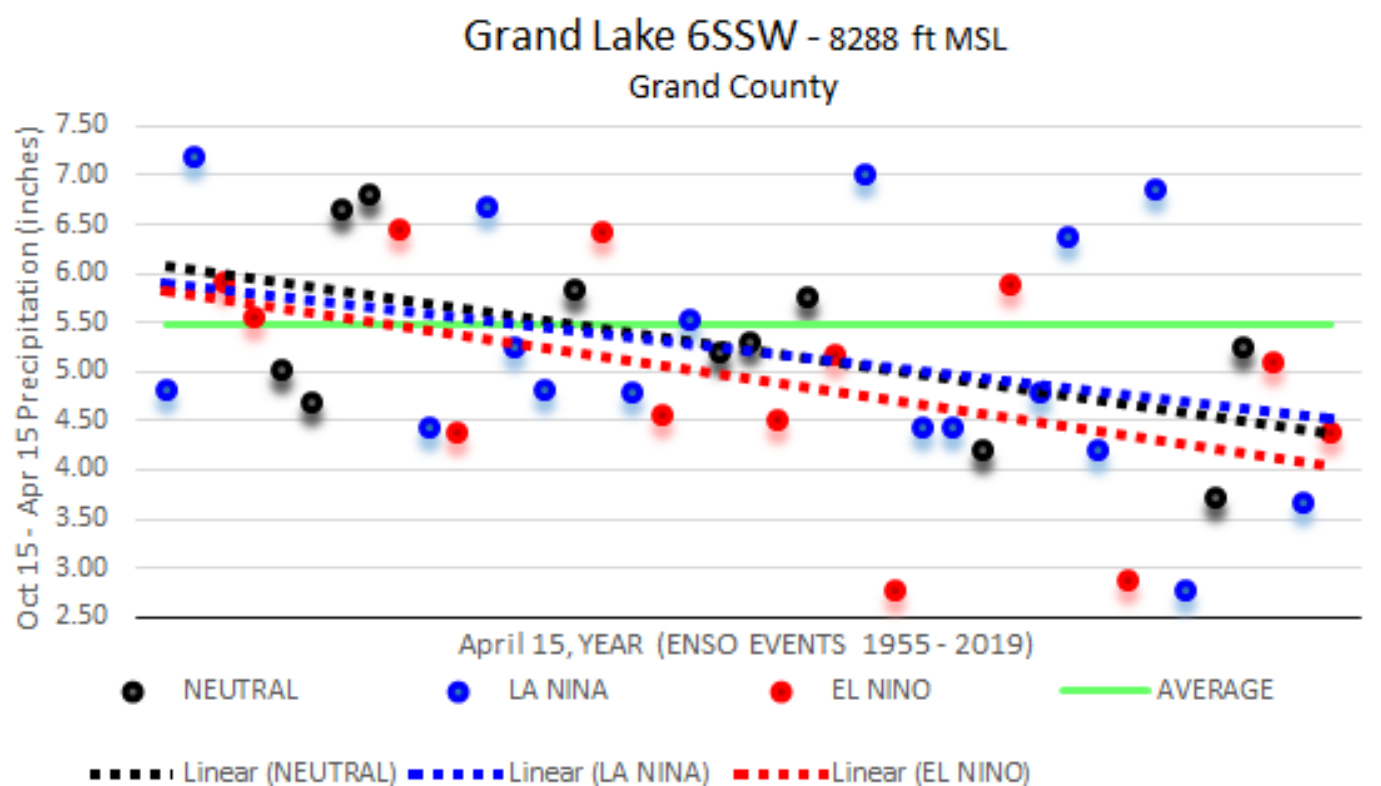
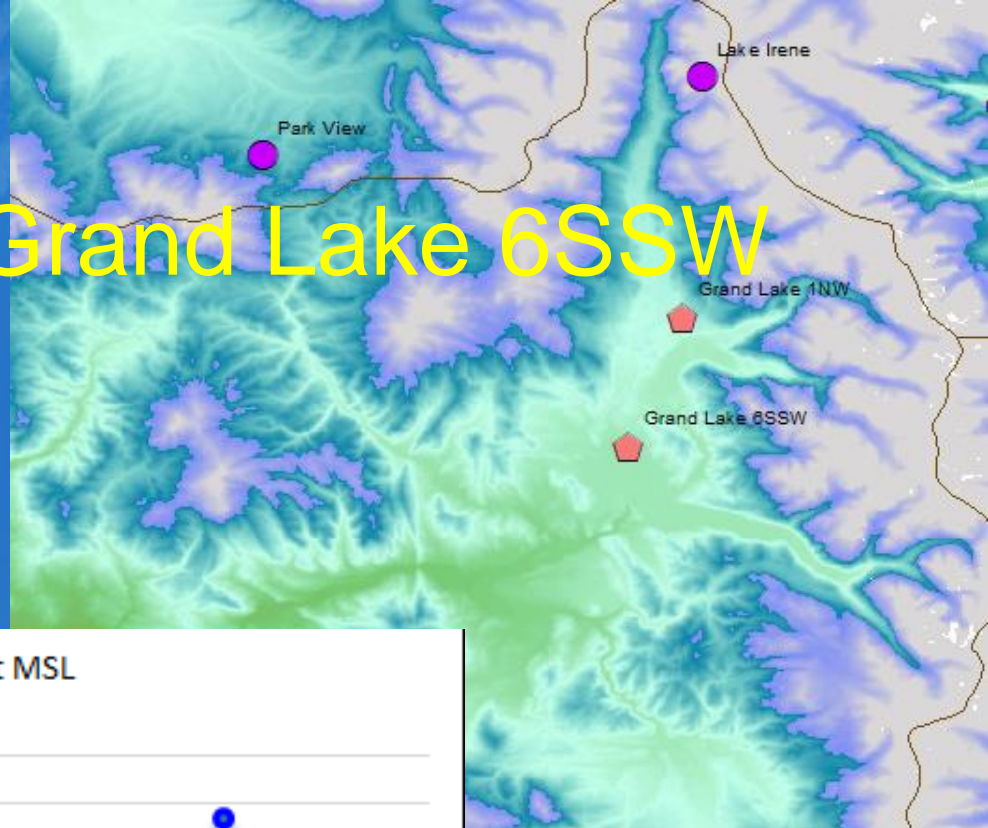


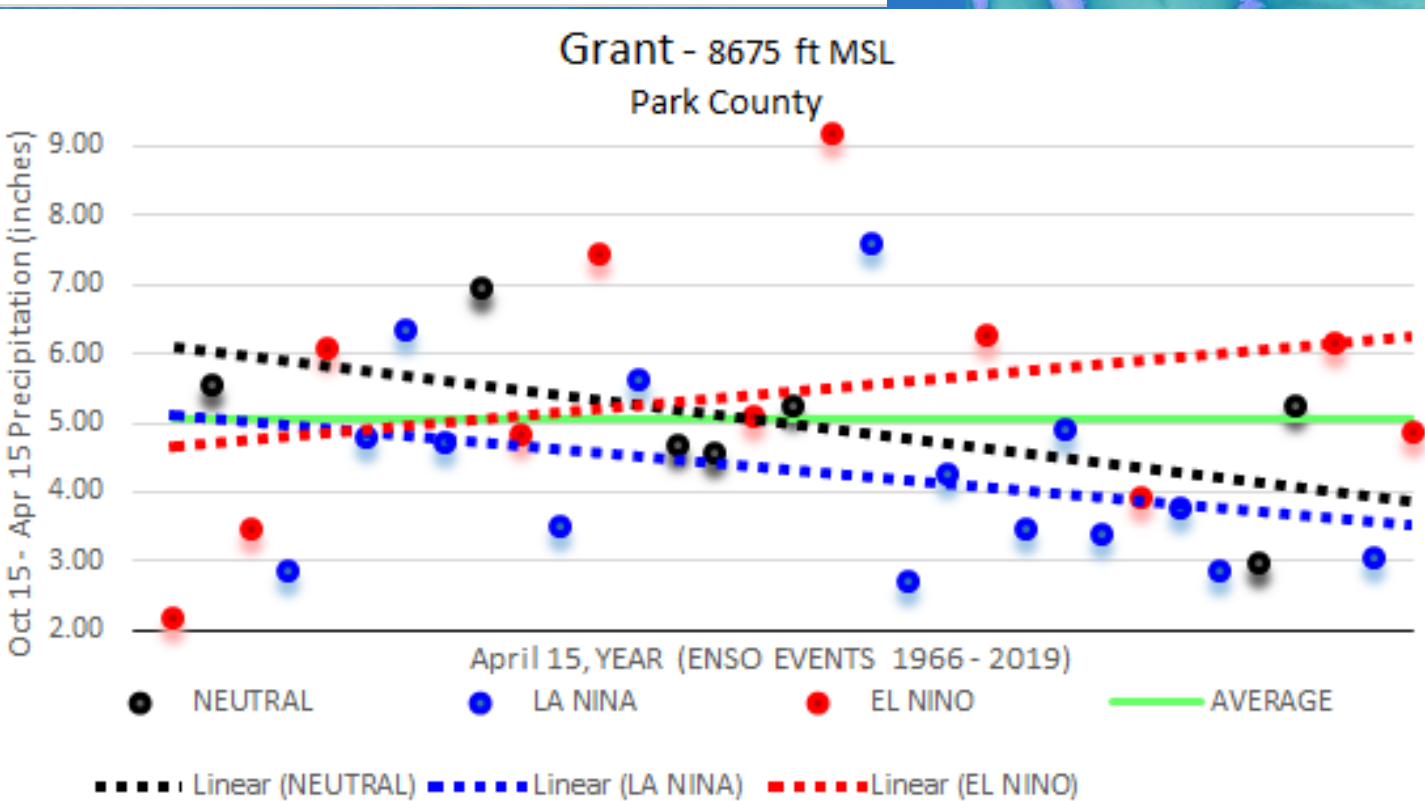
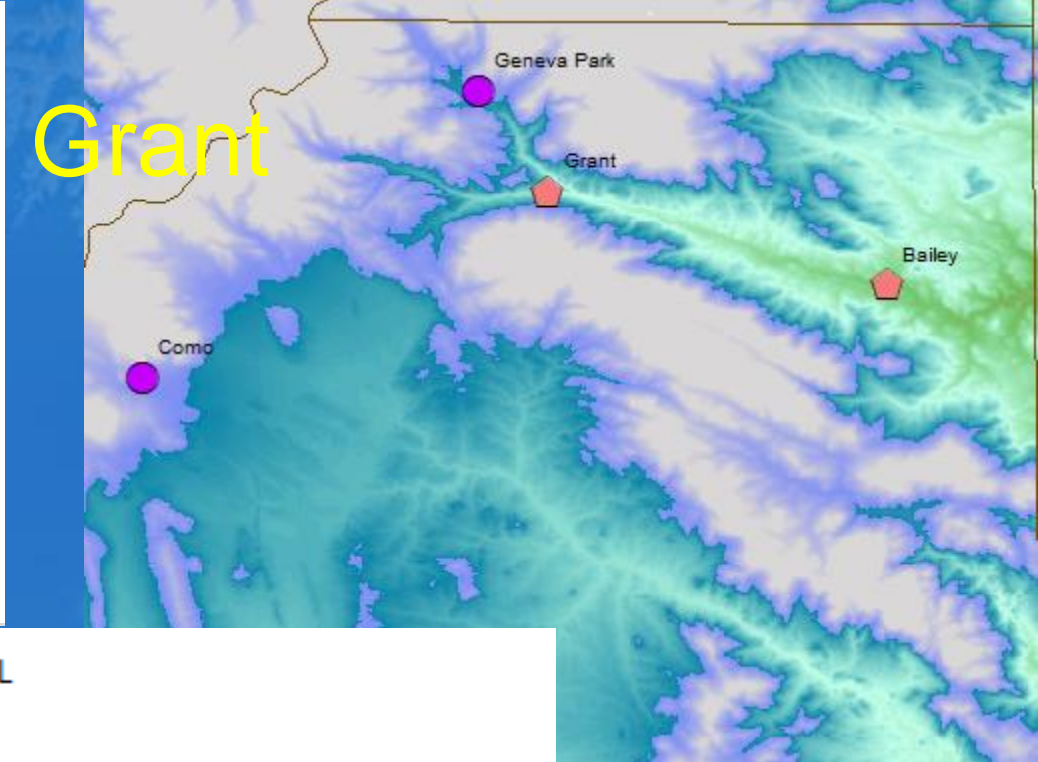
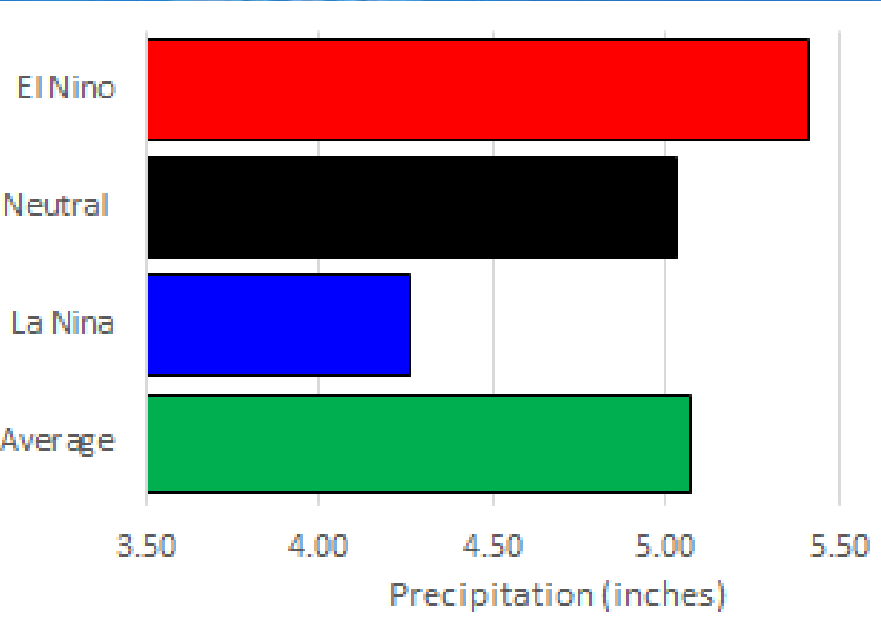


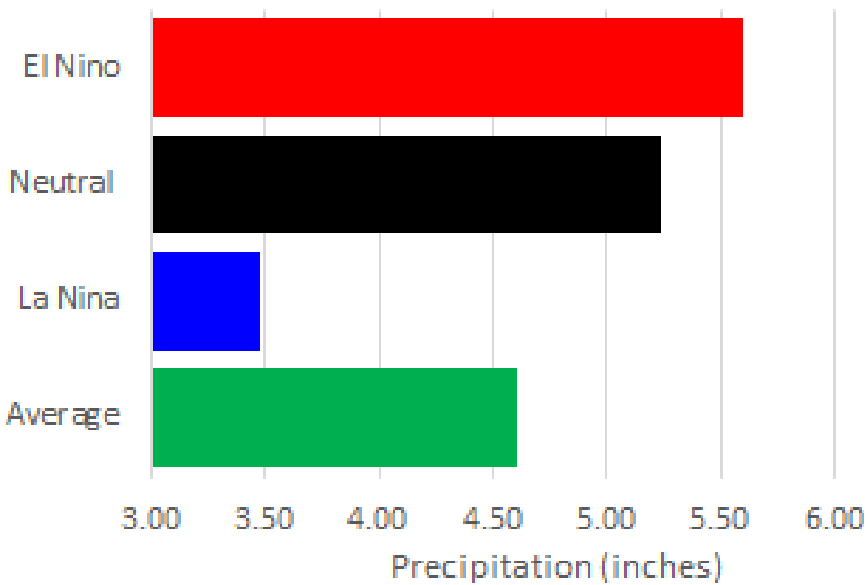




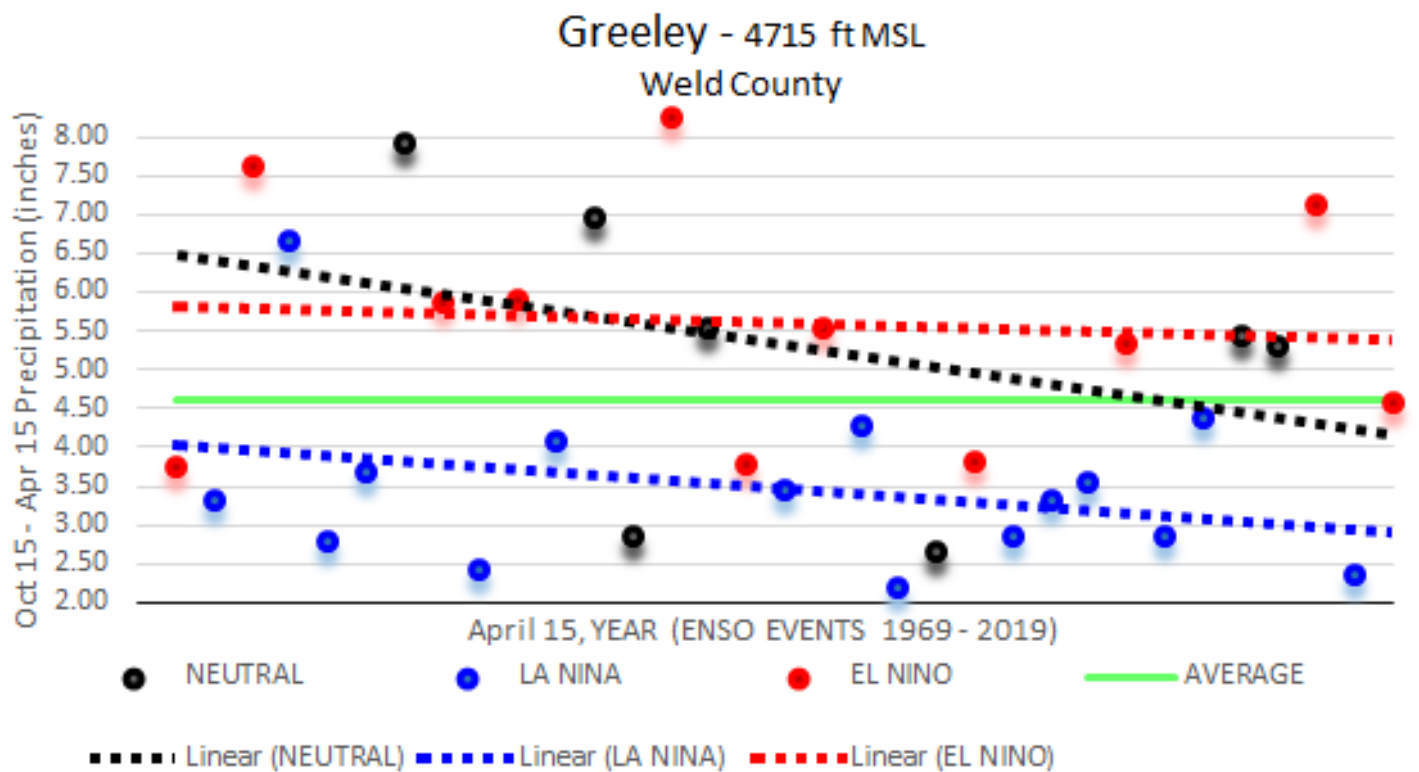
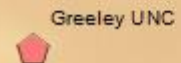
Grand Lake 6SSW

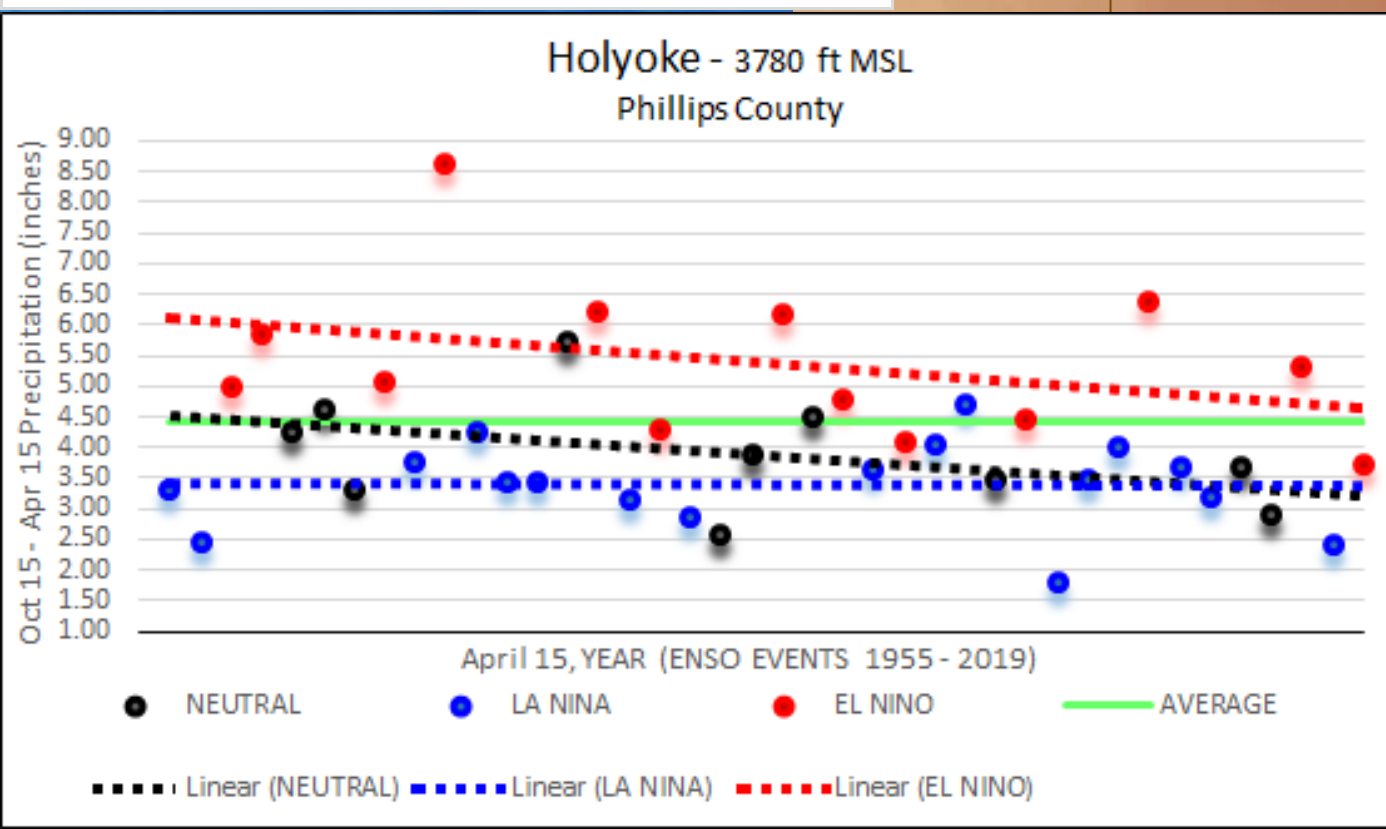
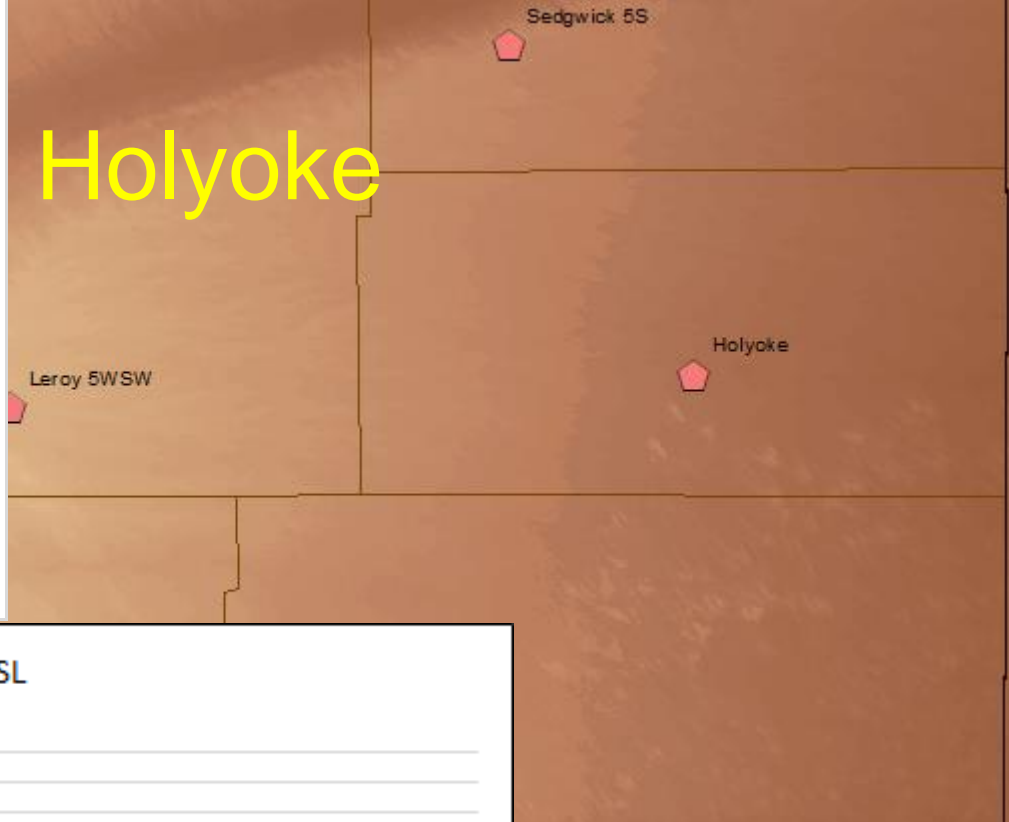
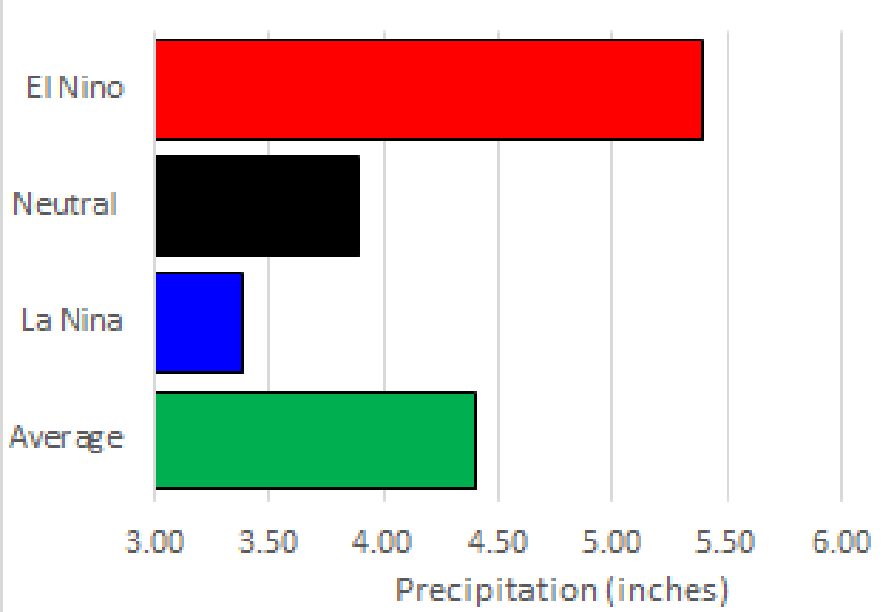


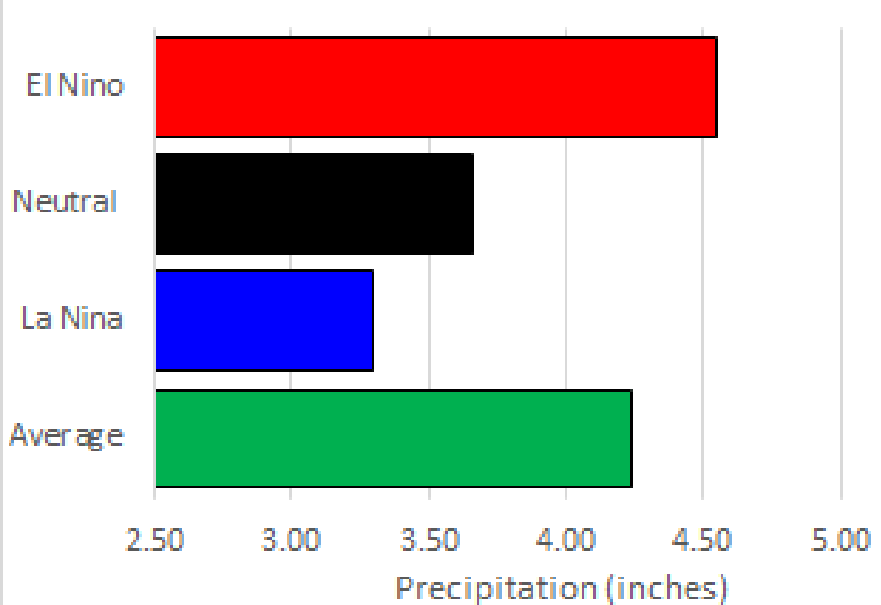




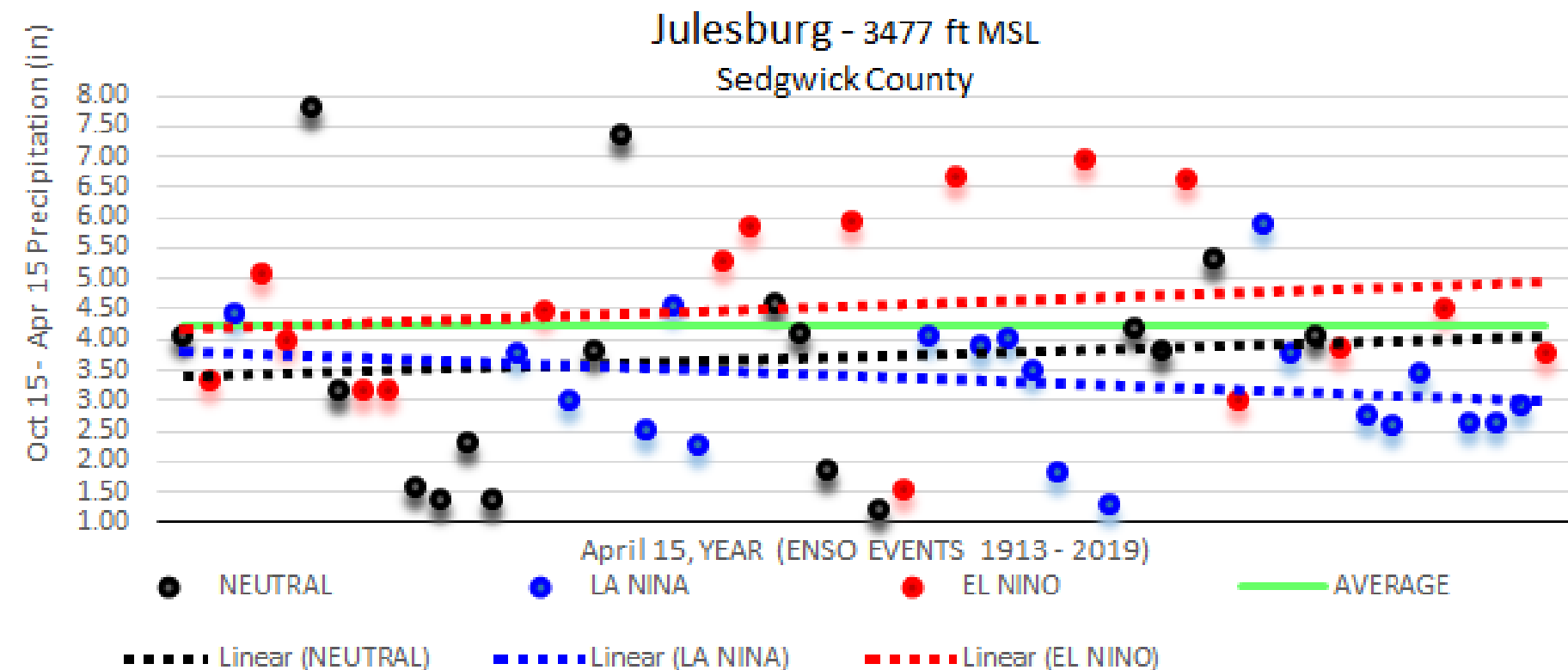
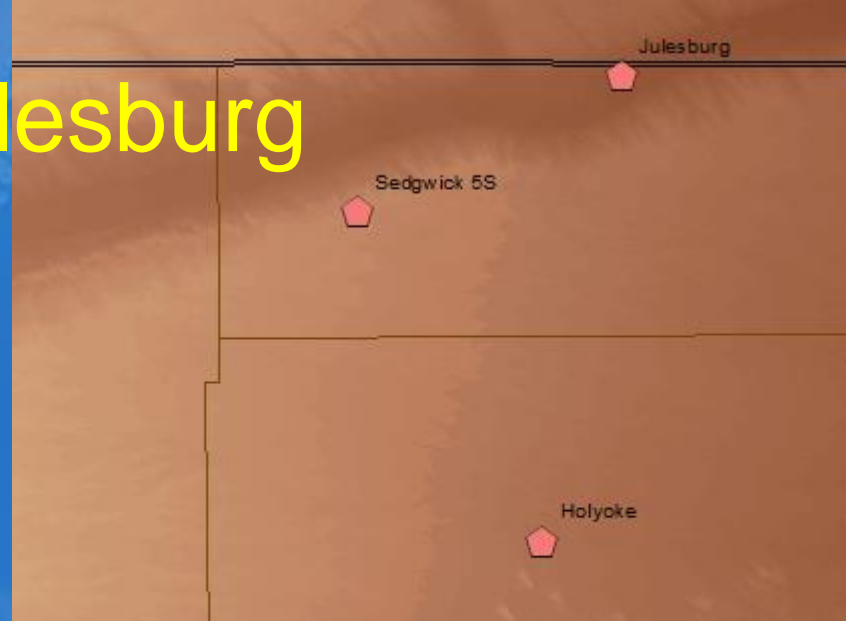
Greeley

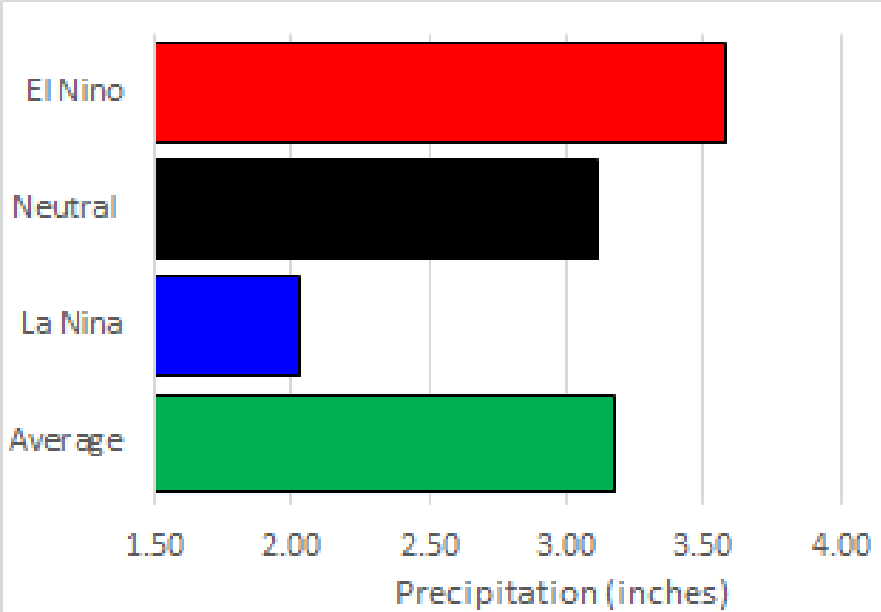






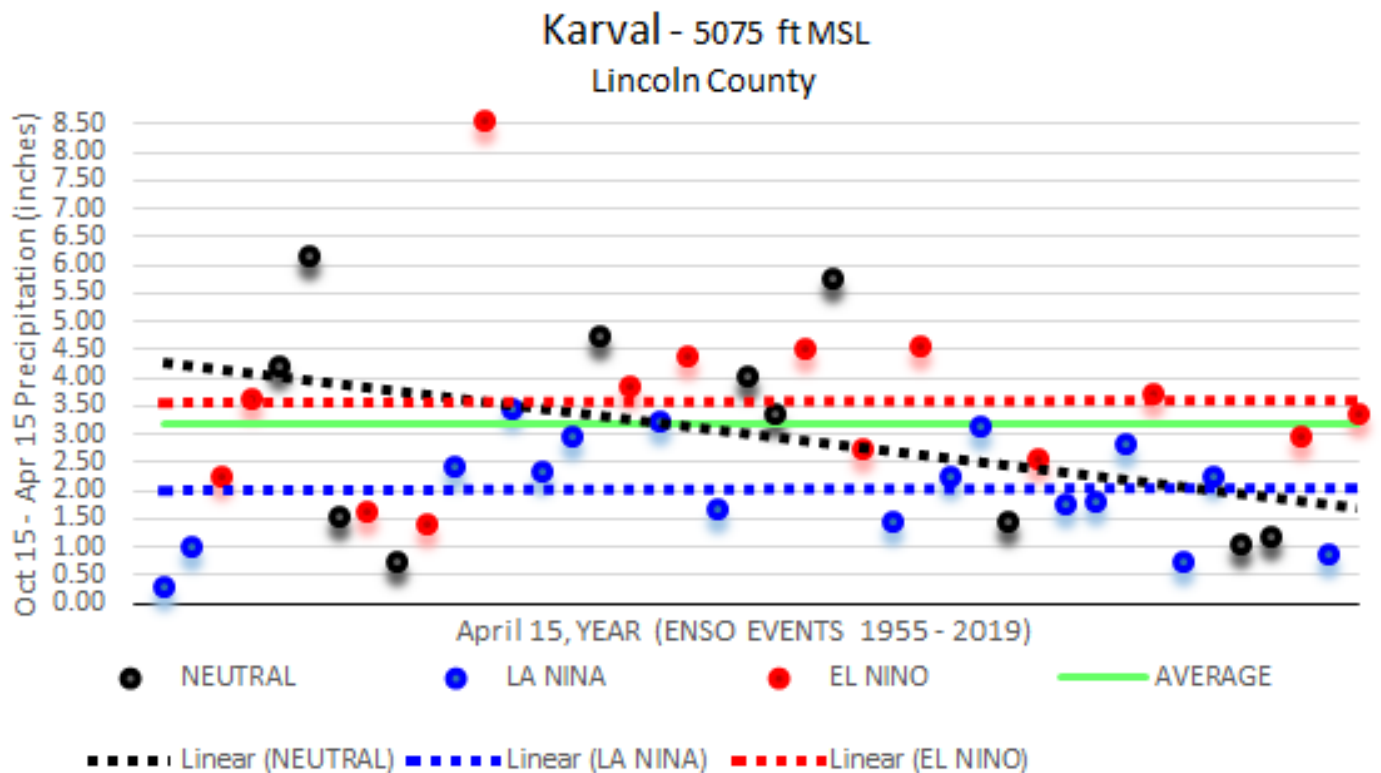
Julesburg



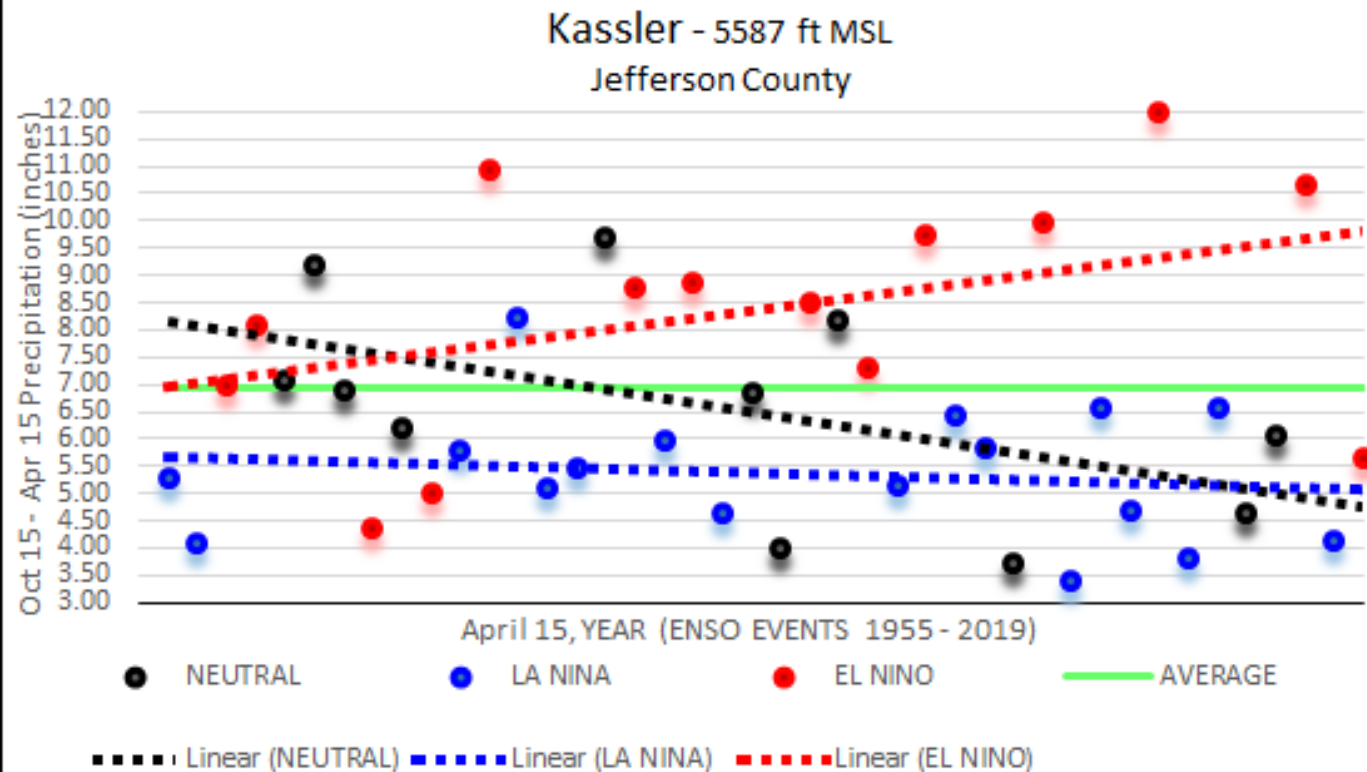
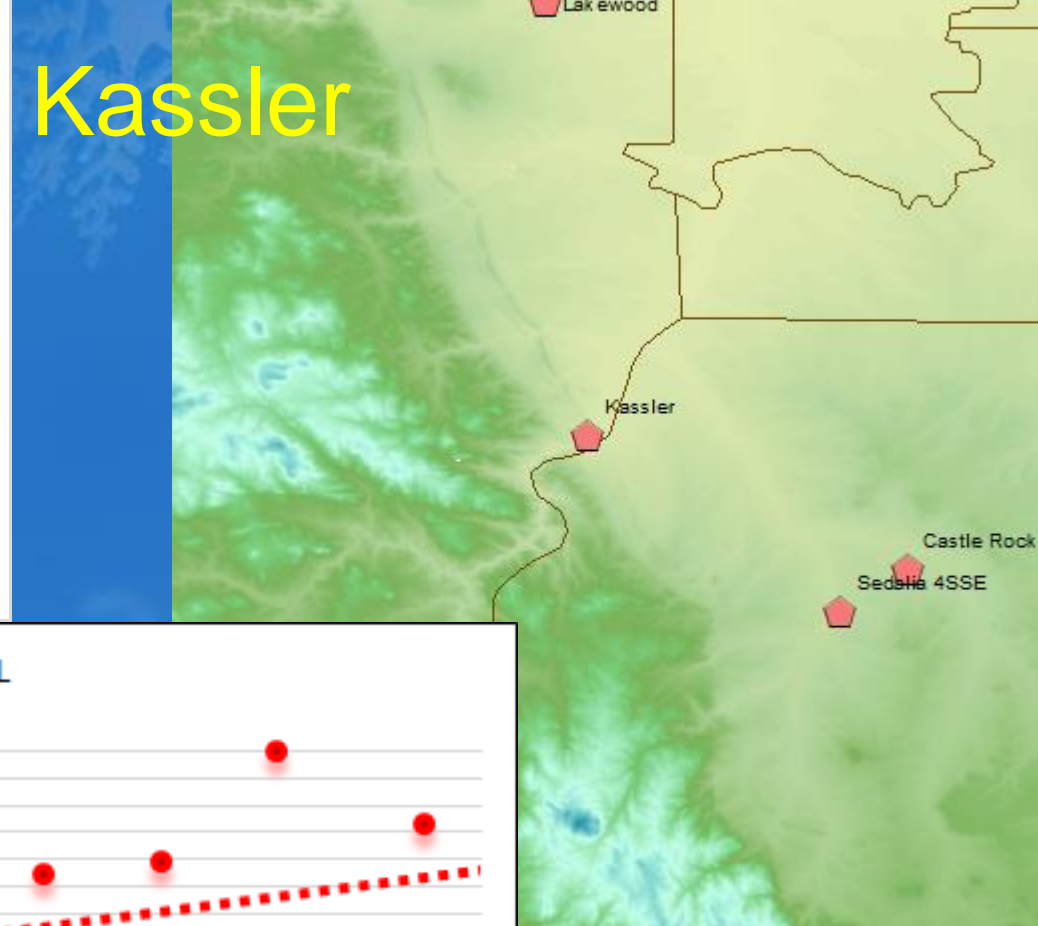
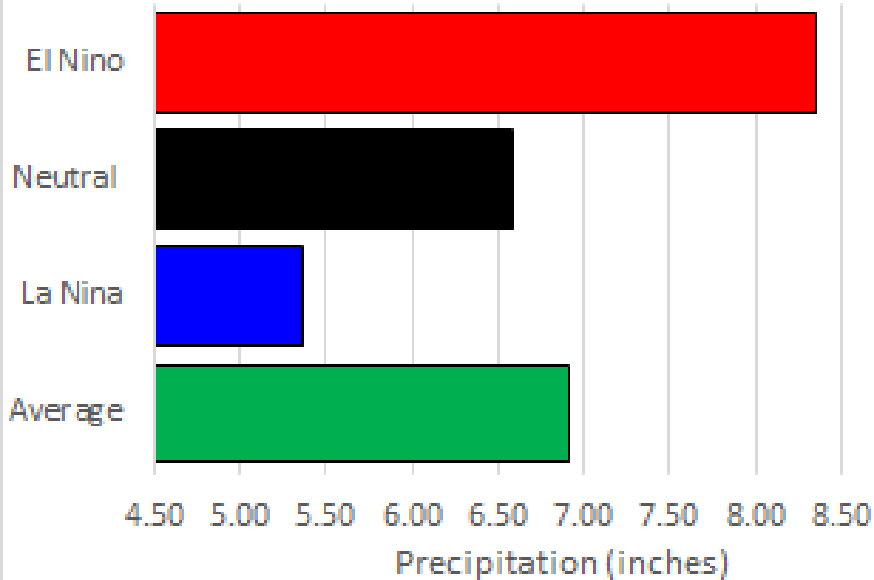


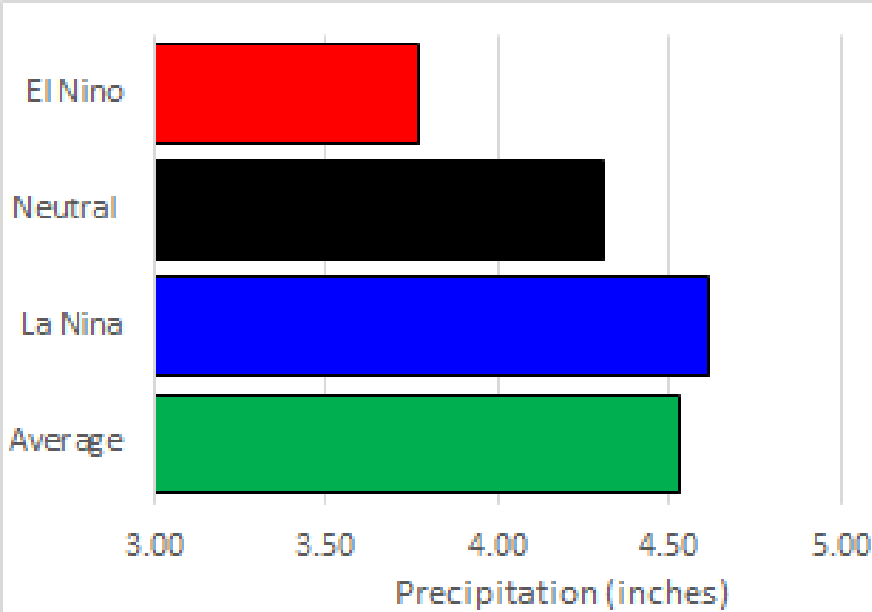
Karval

Karval

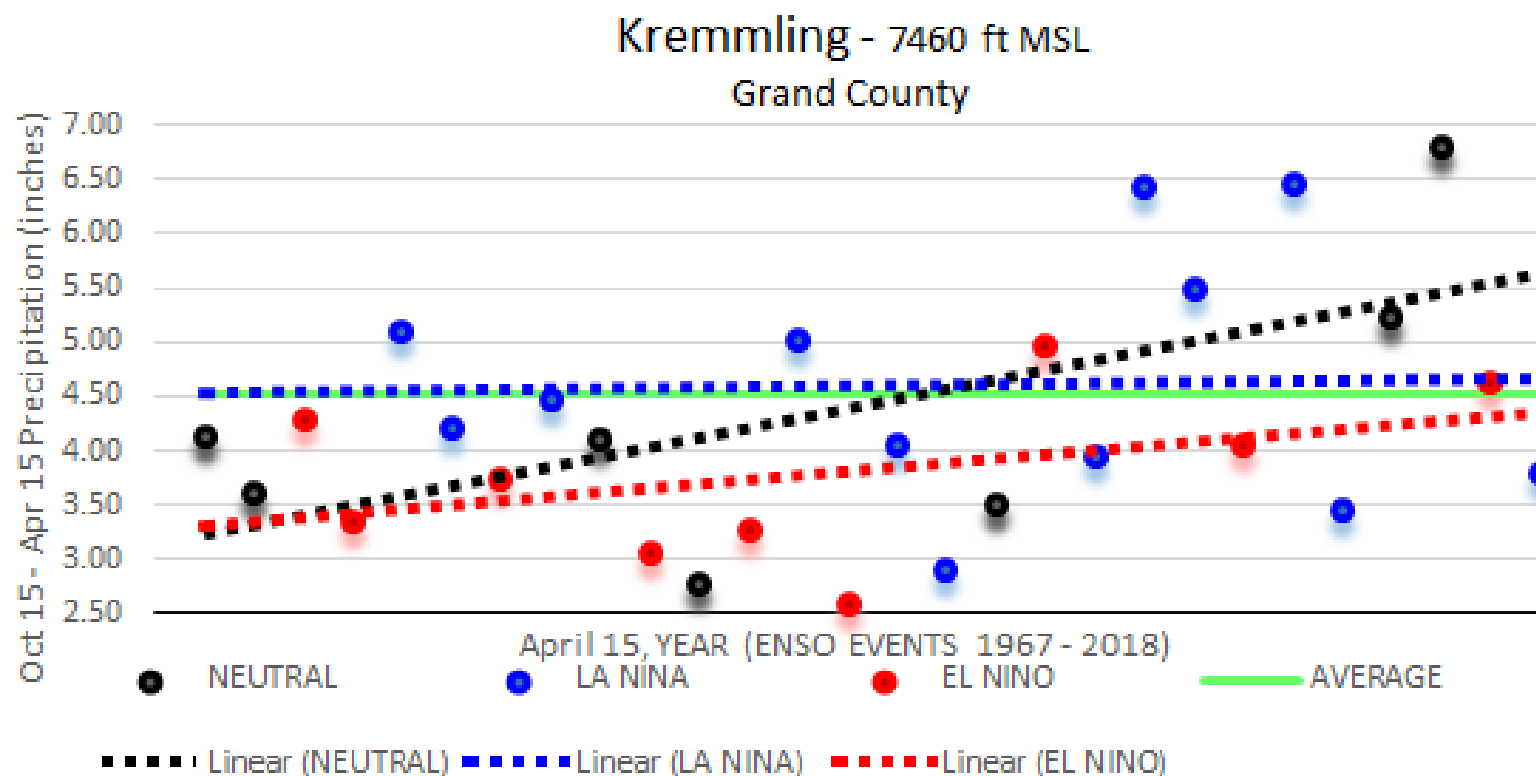
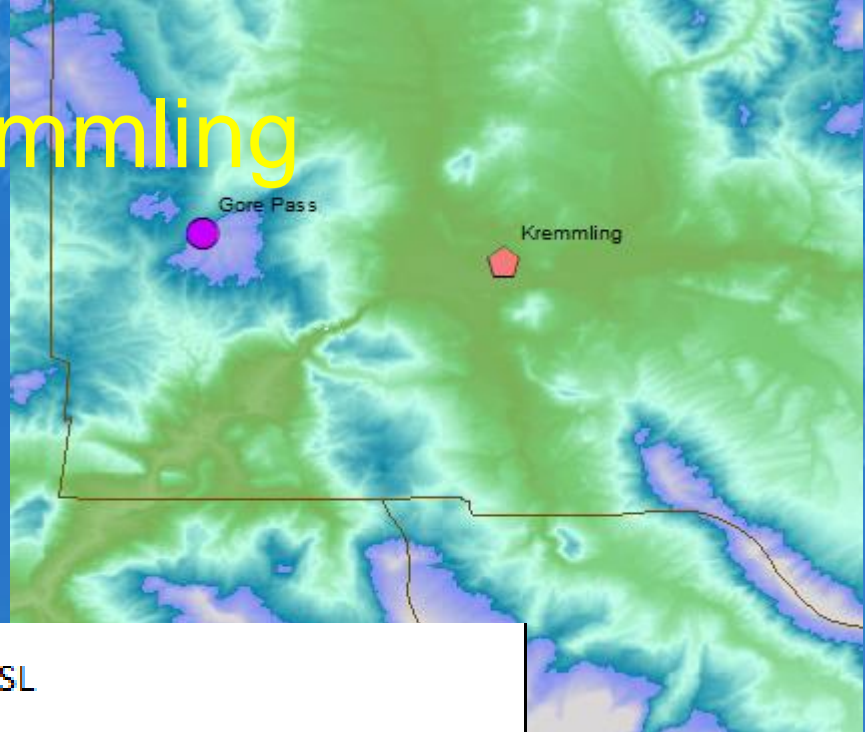


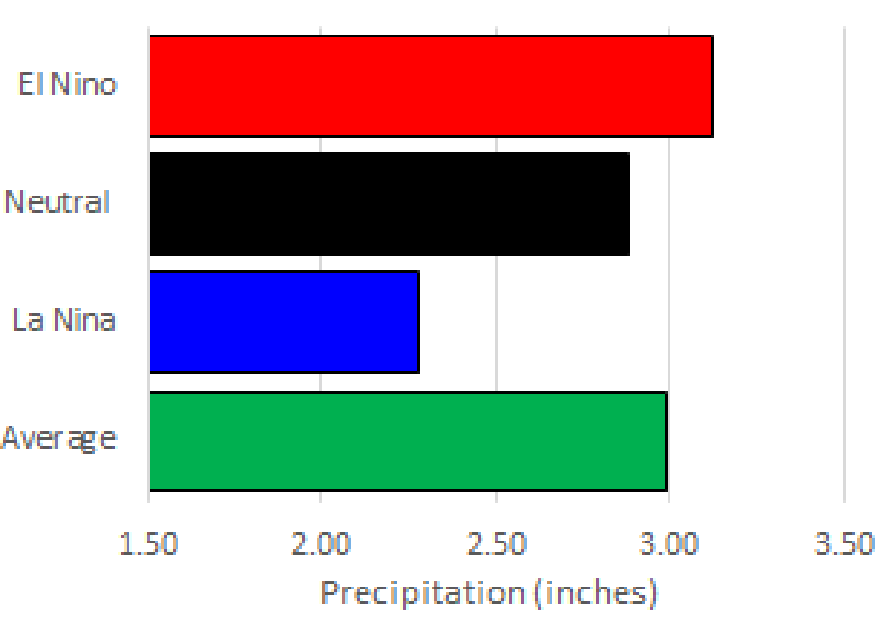
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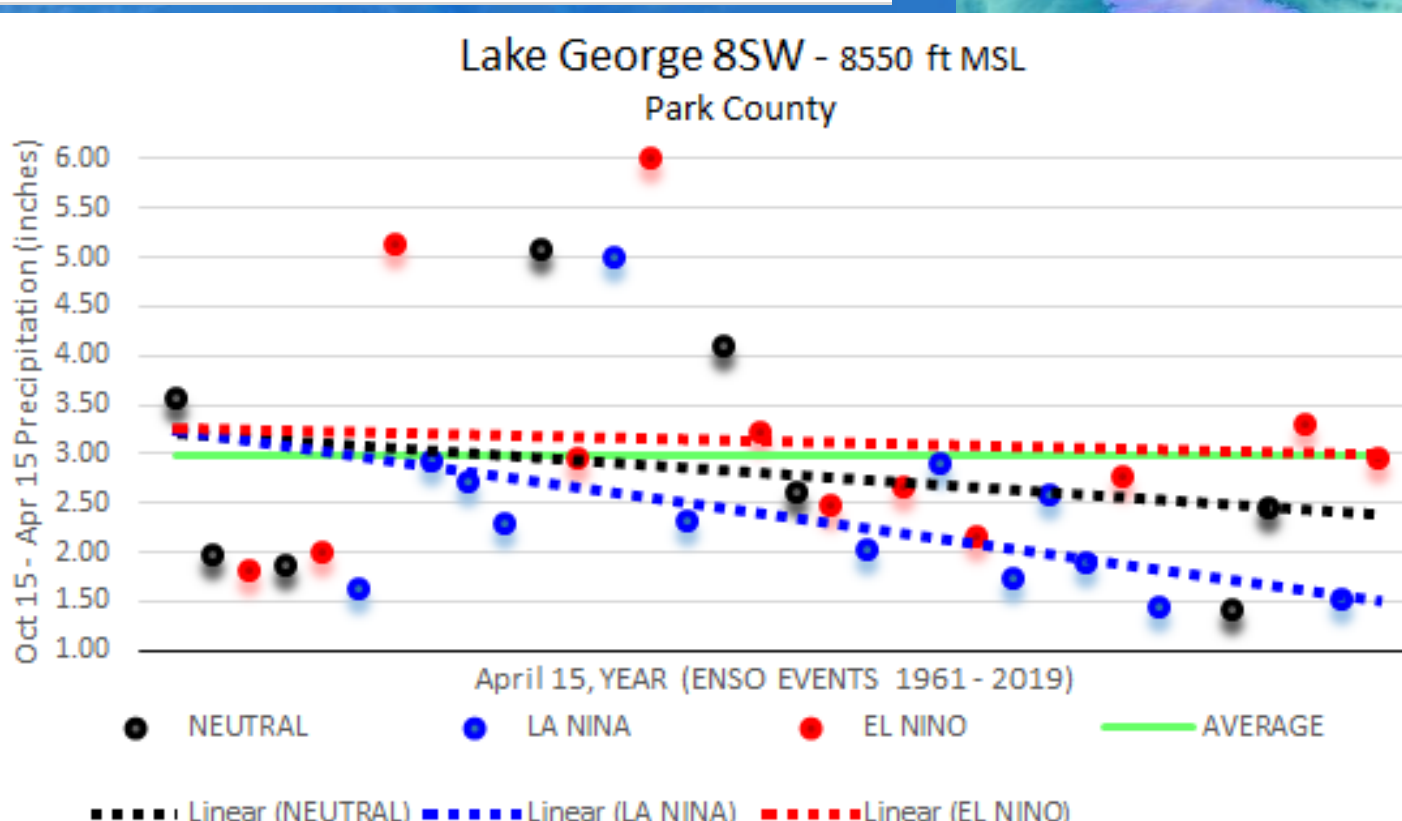


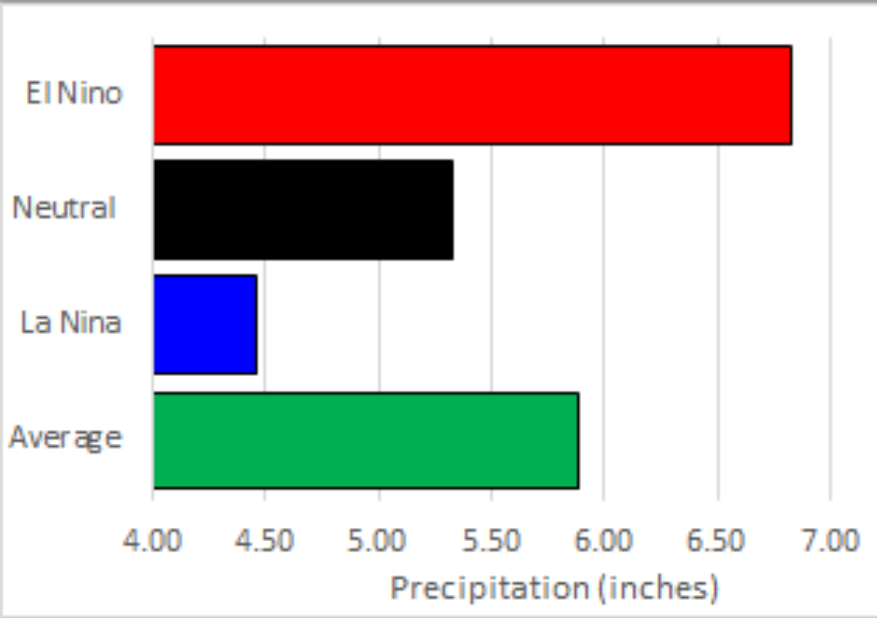
Kremmling



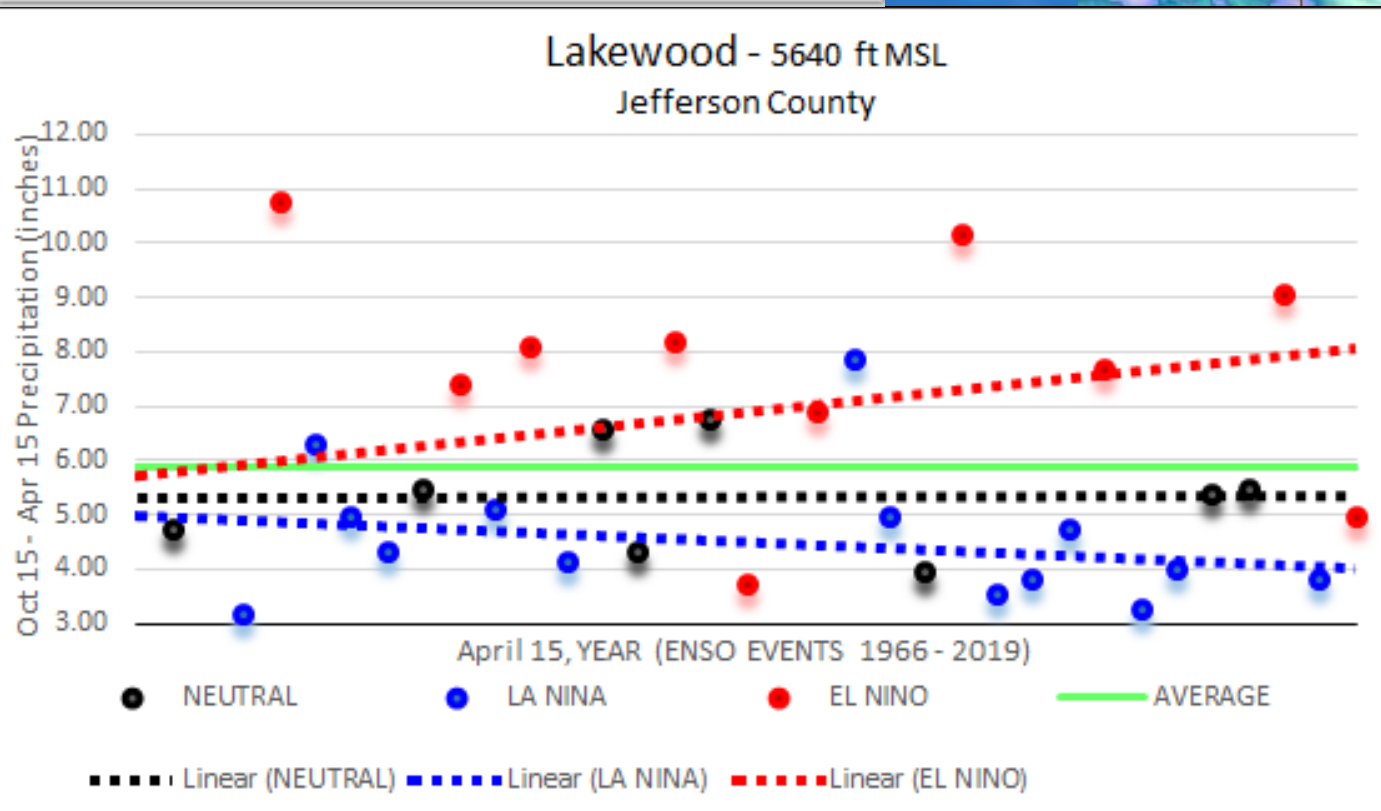


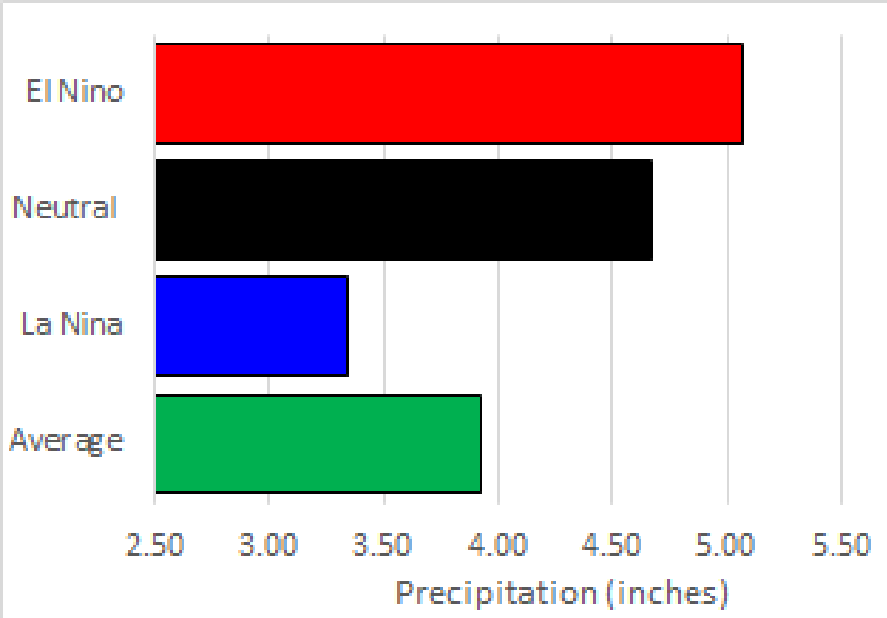
Lake George 8SW



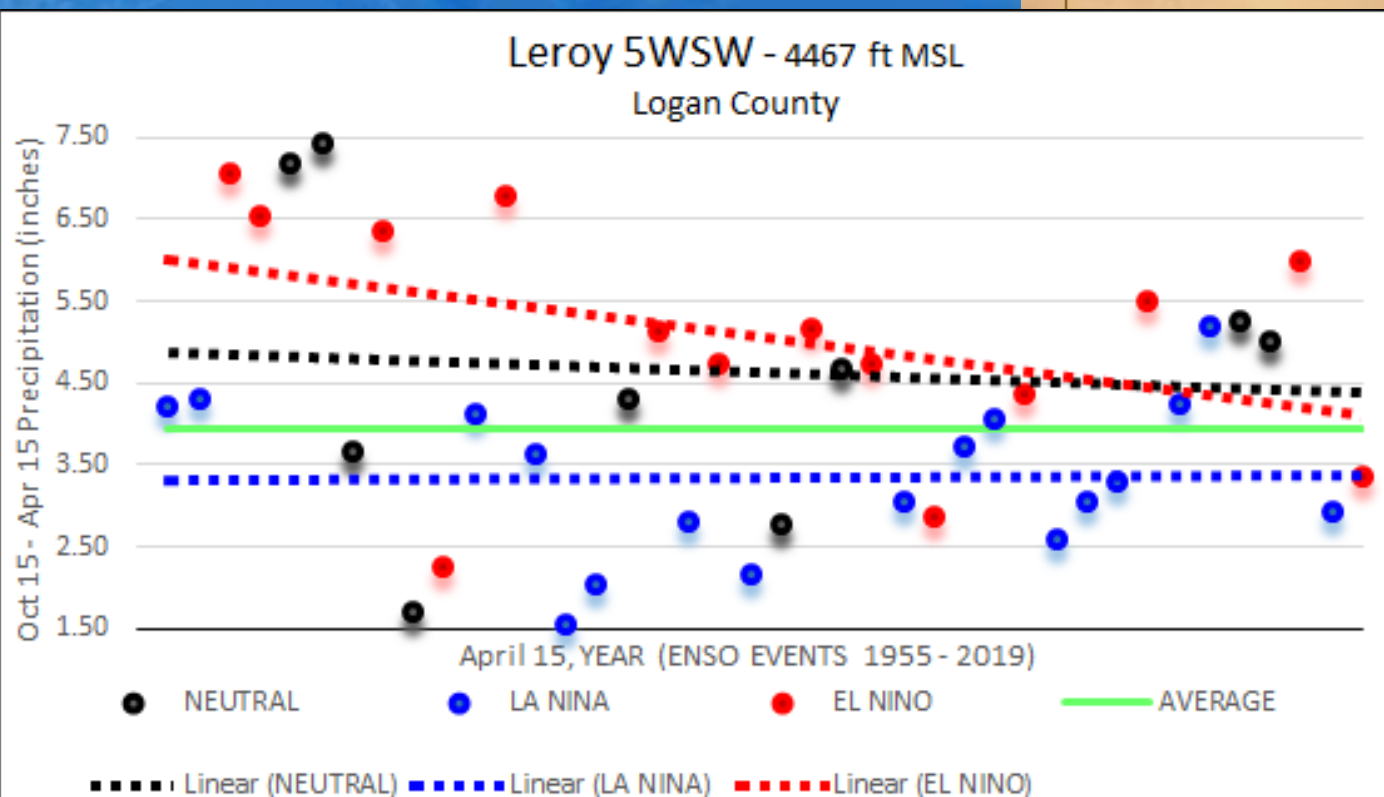
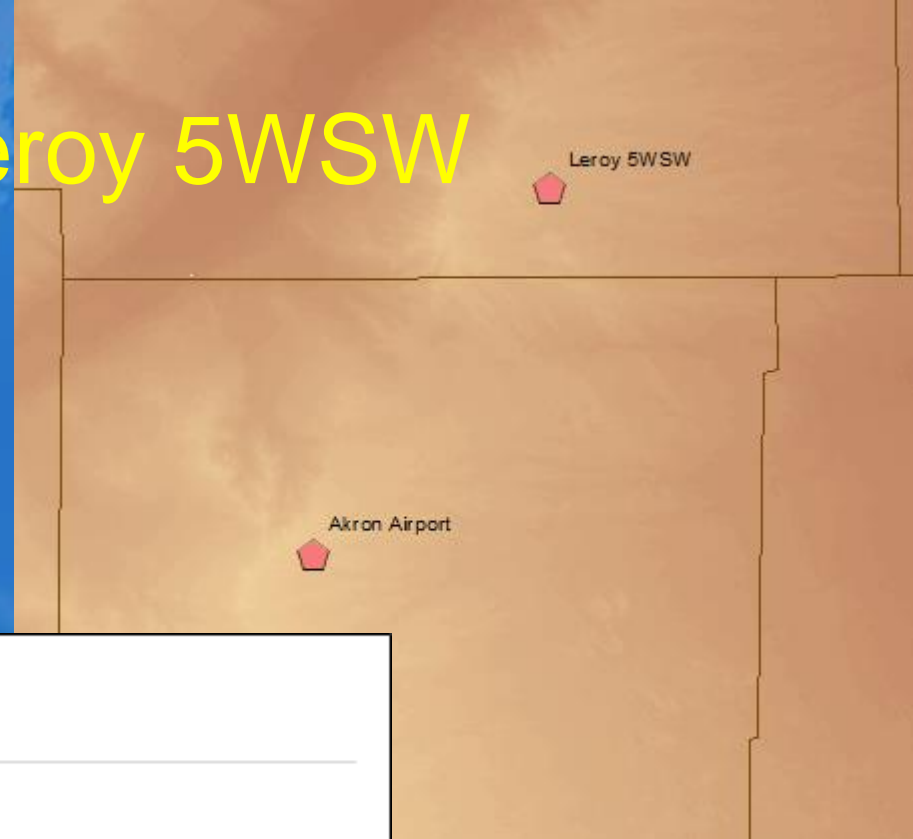


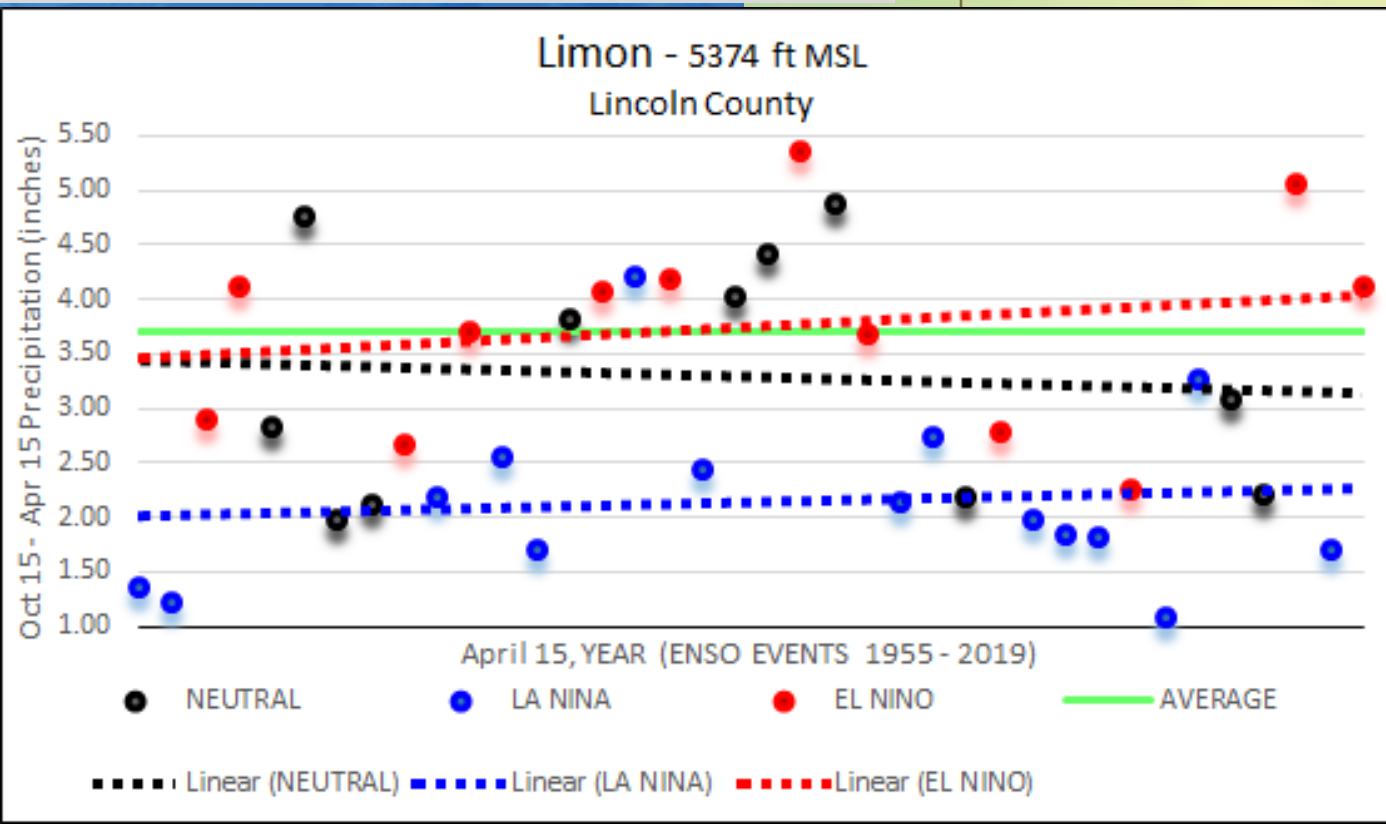
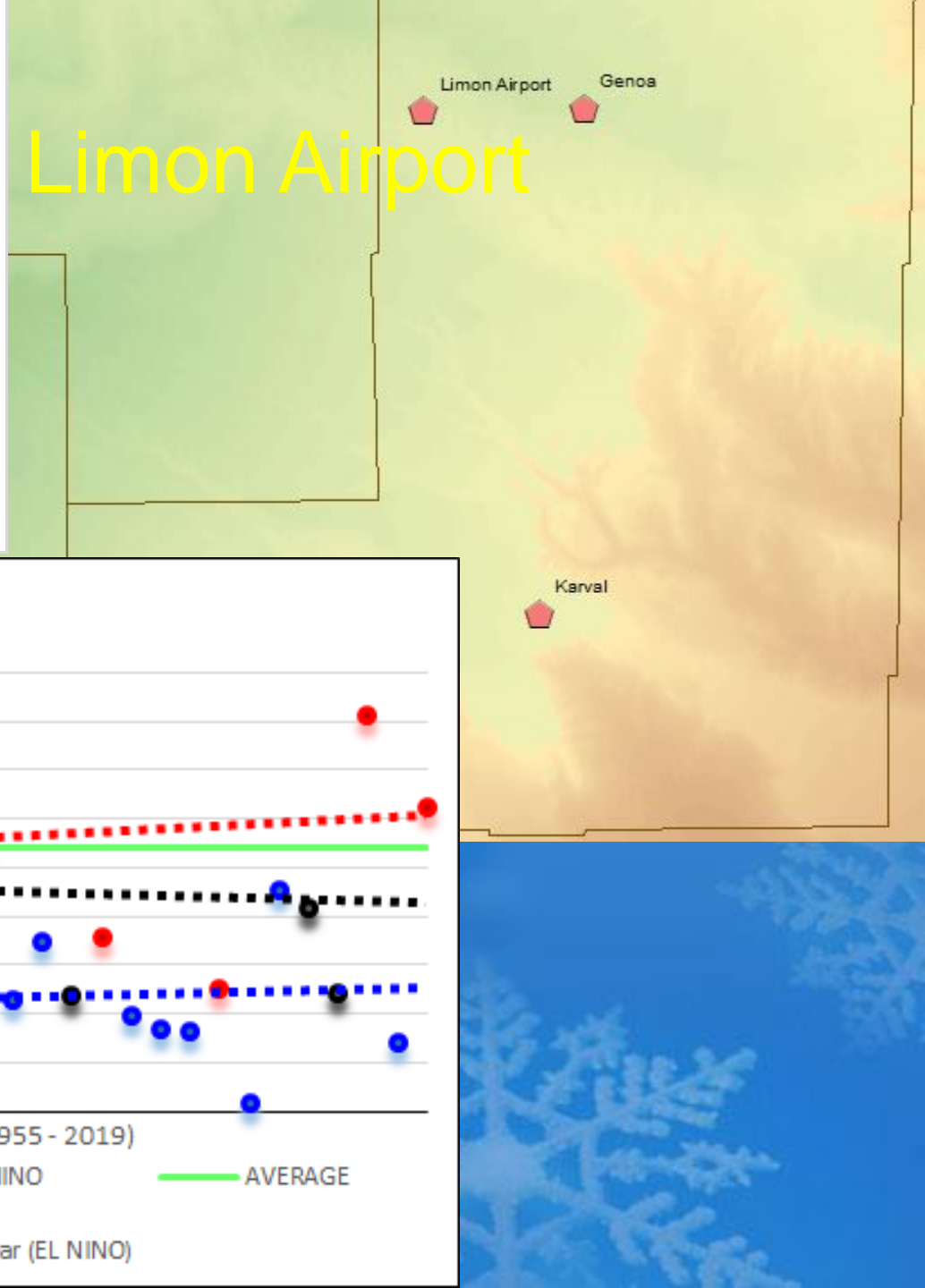
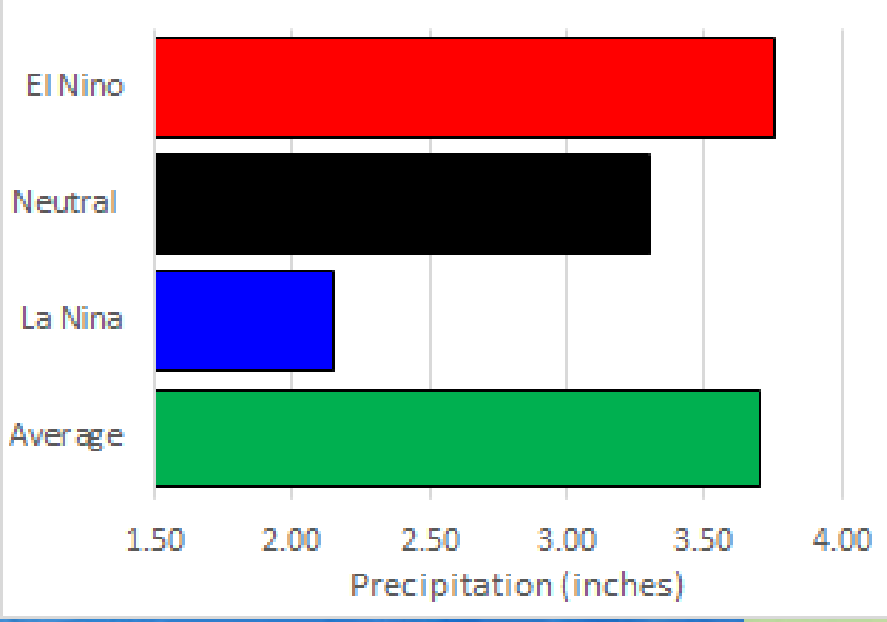
Lakewood

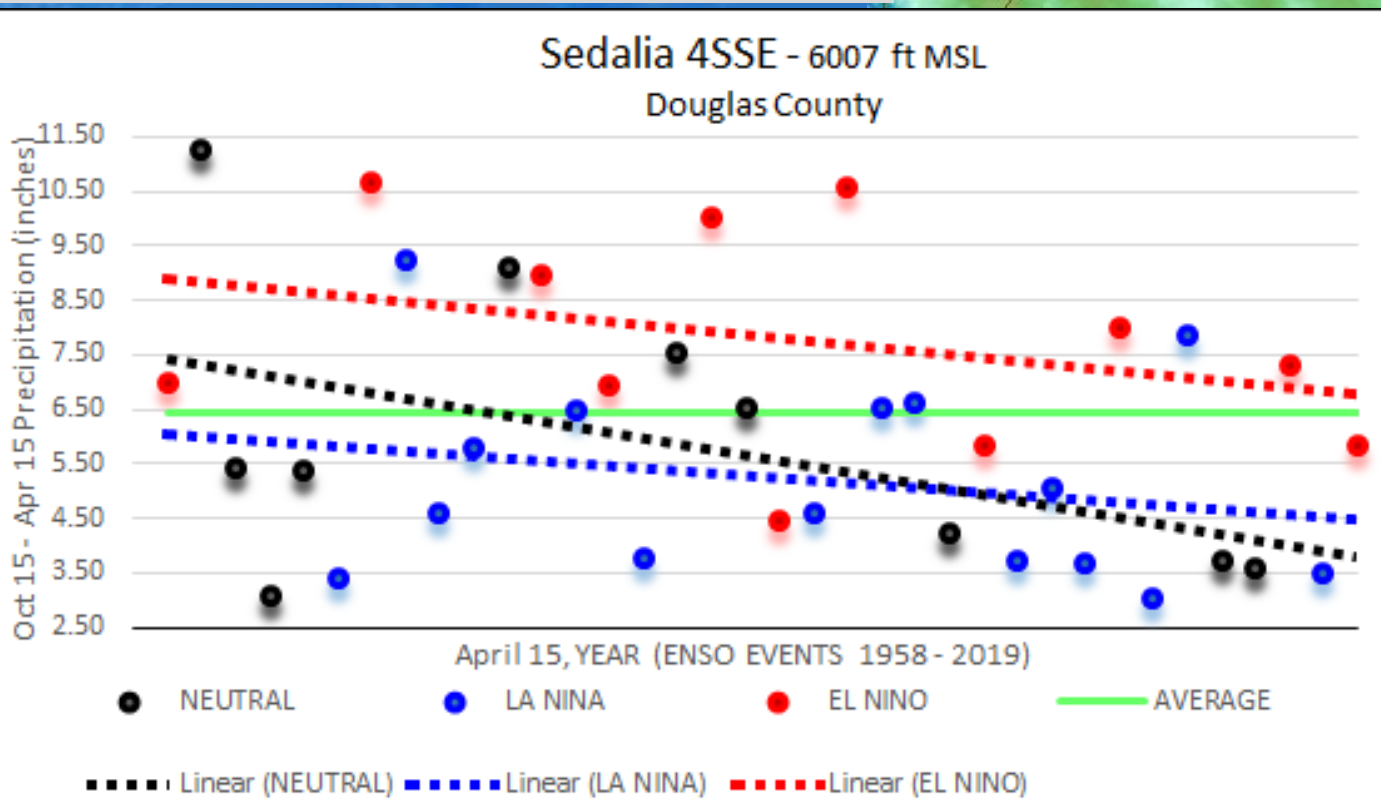
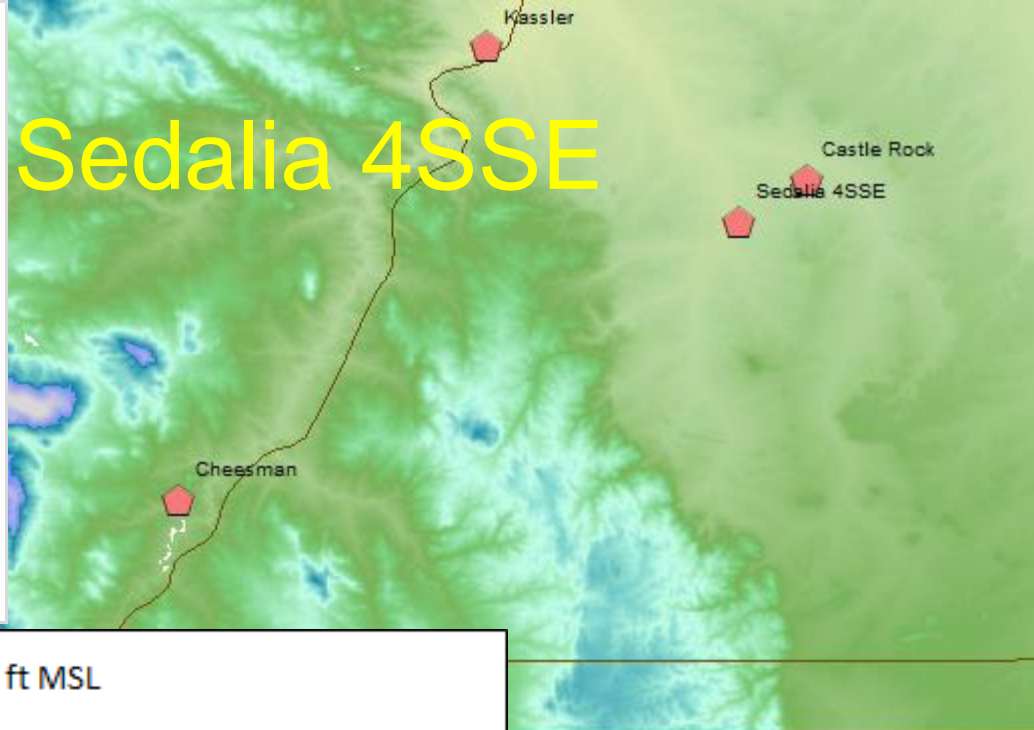
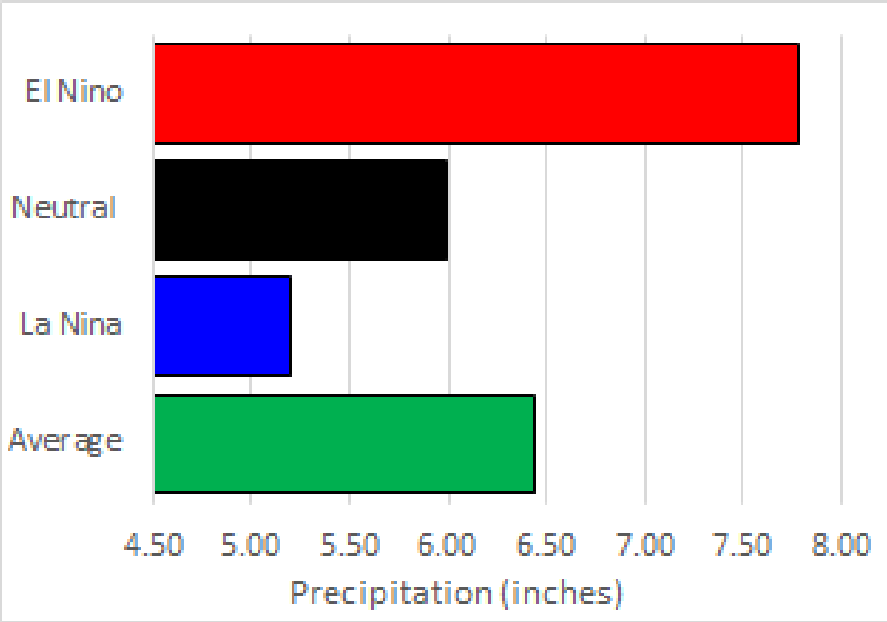




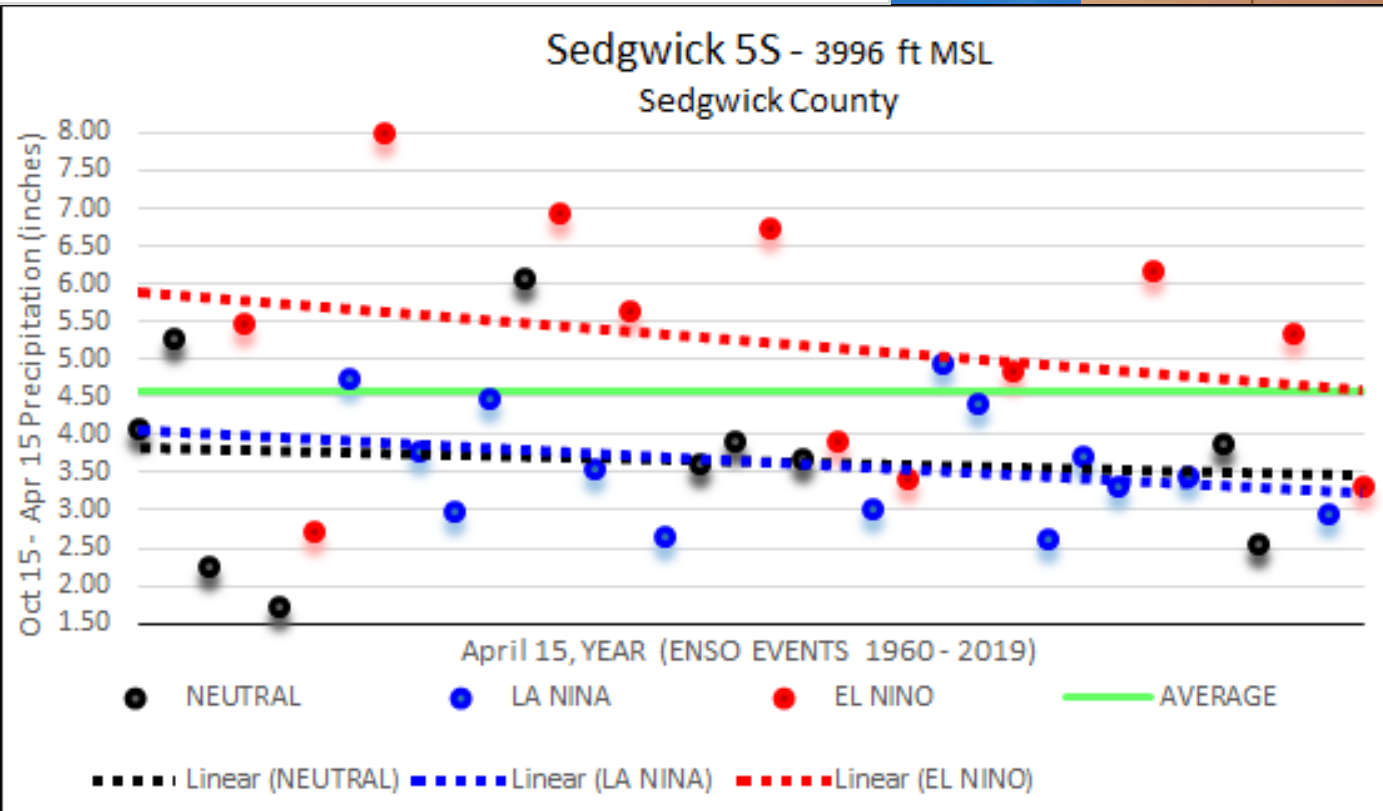
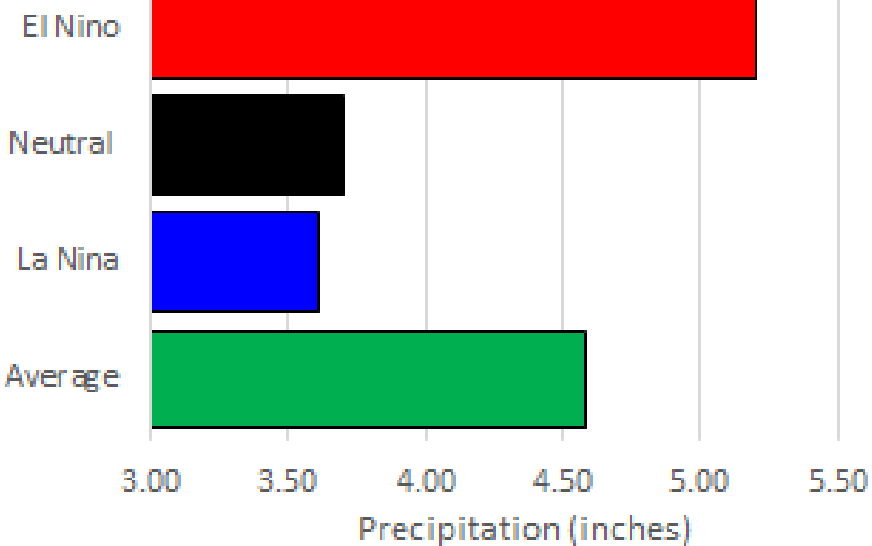
Leroy 5WSW



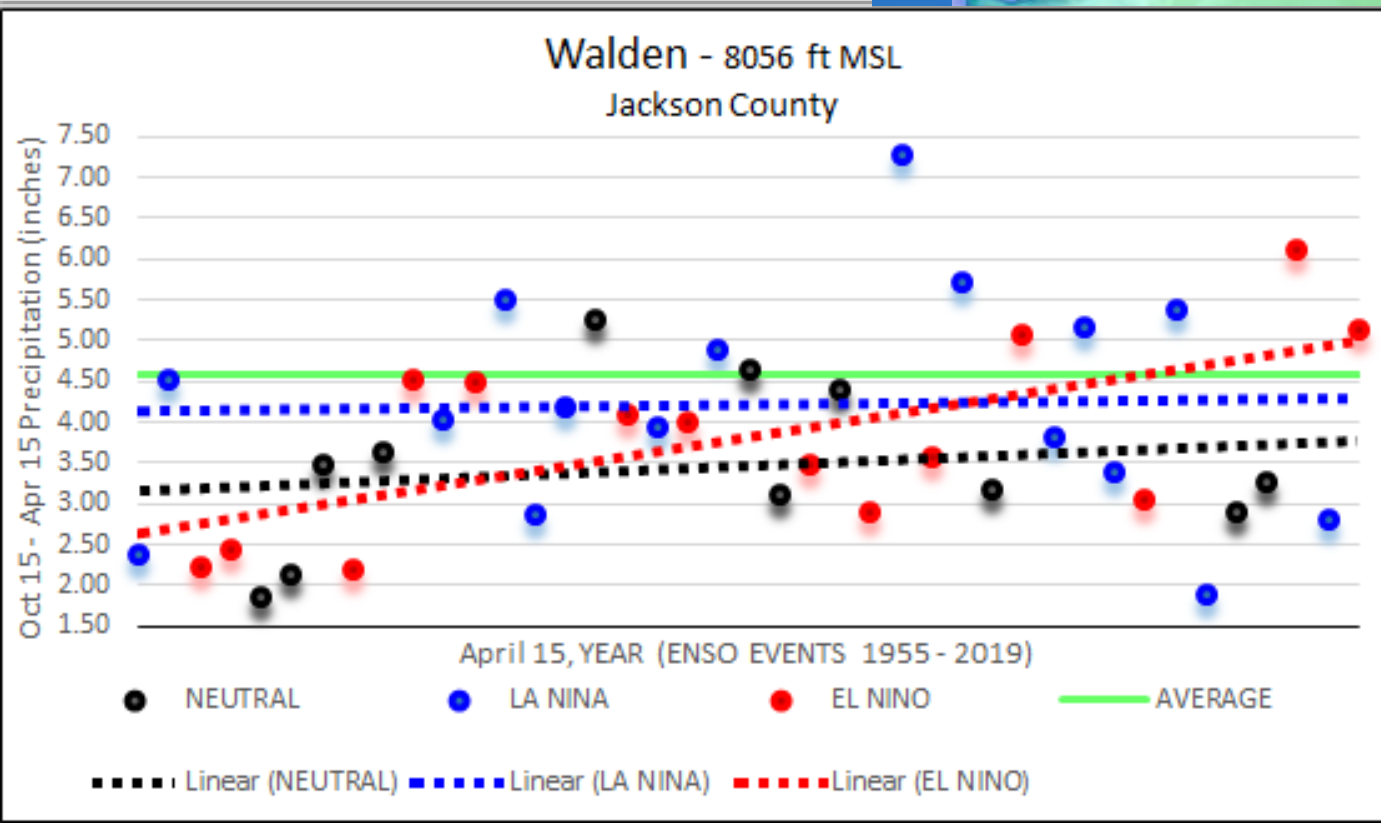
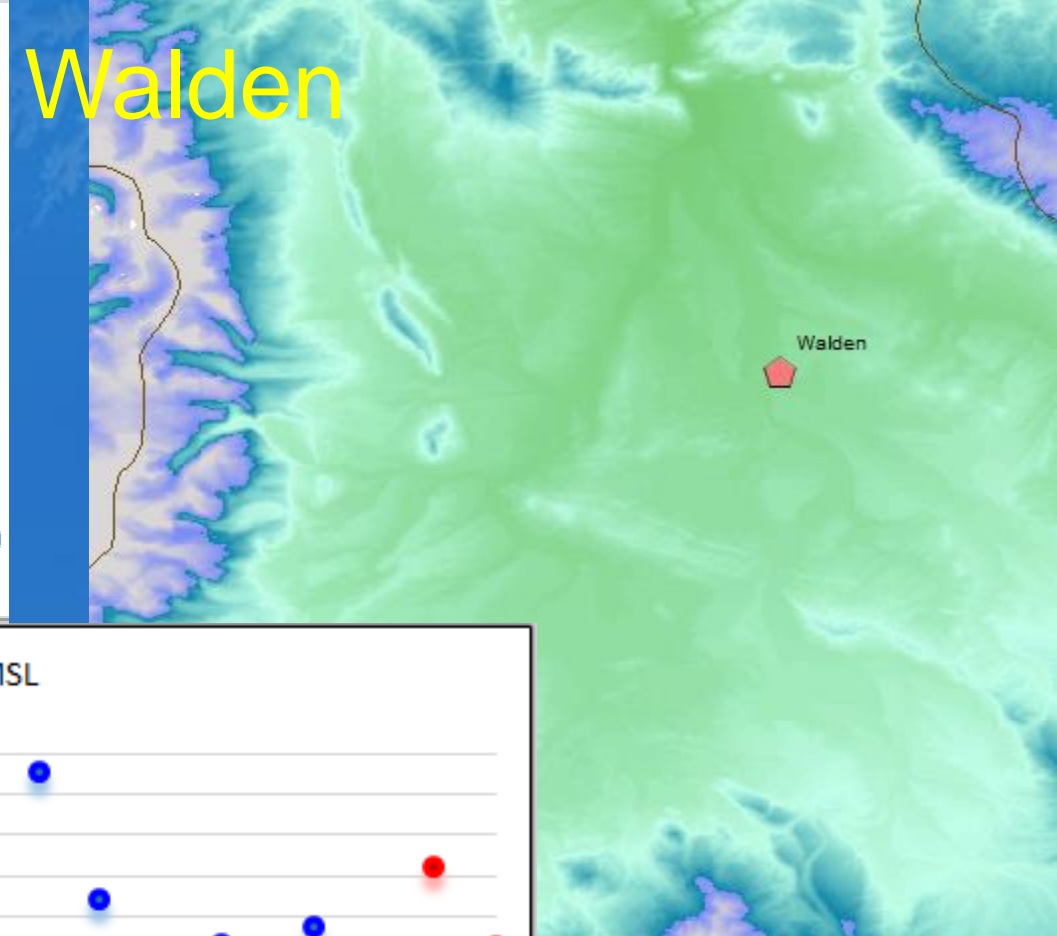
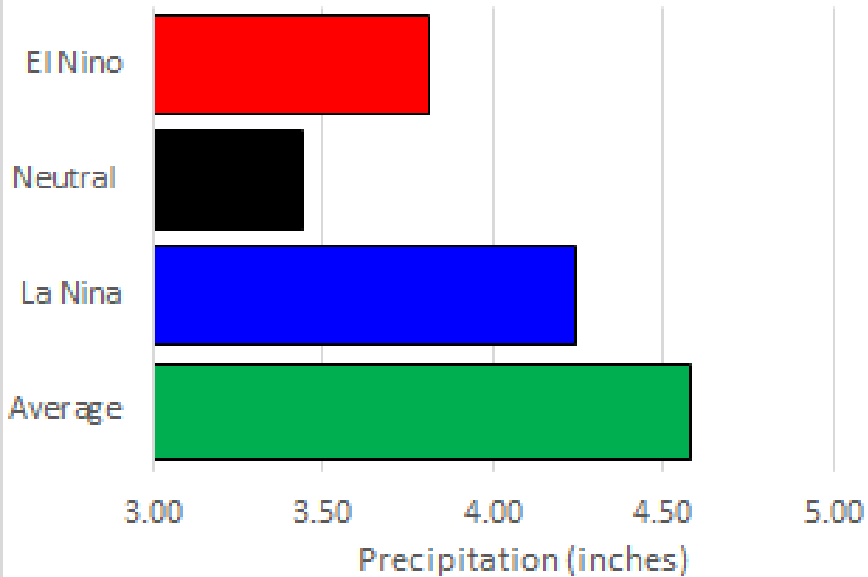


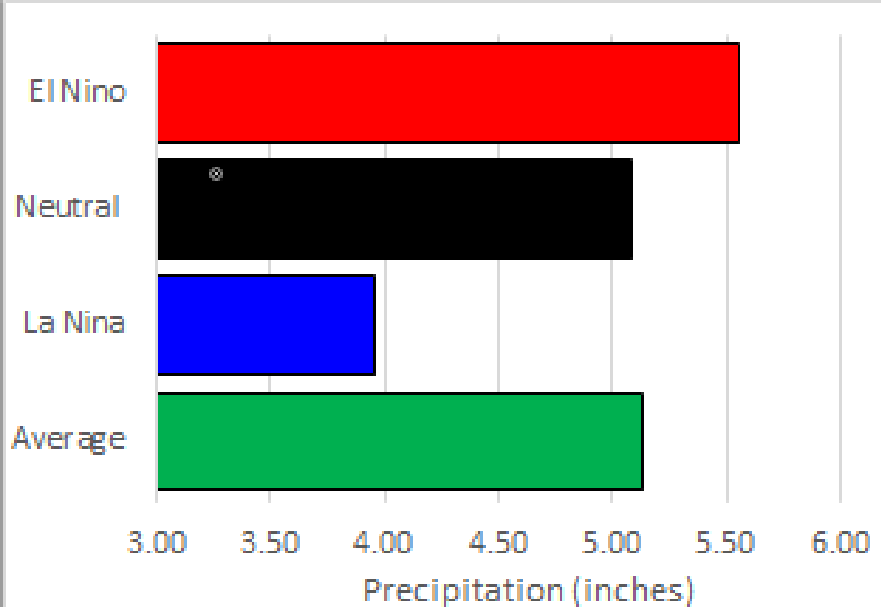


Sedgwick 5S

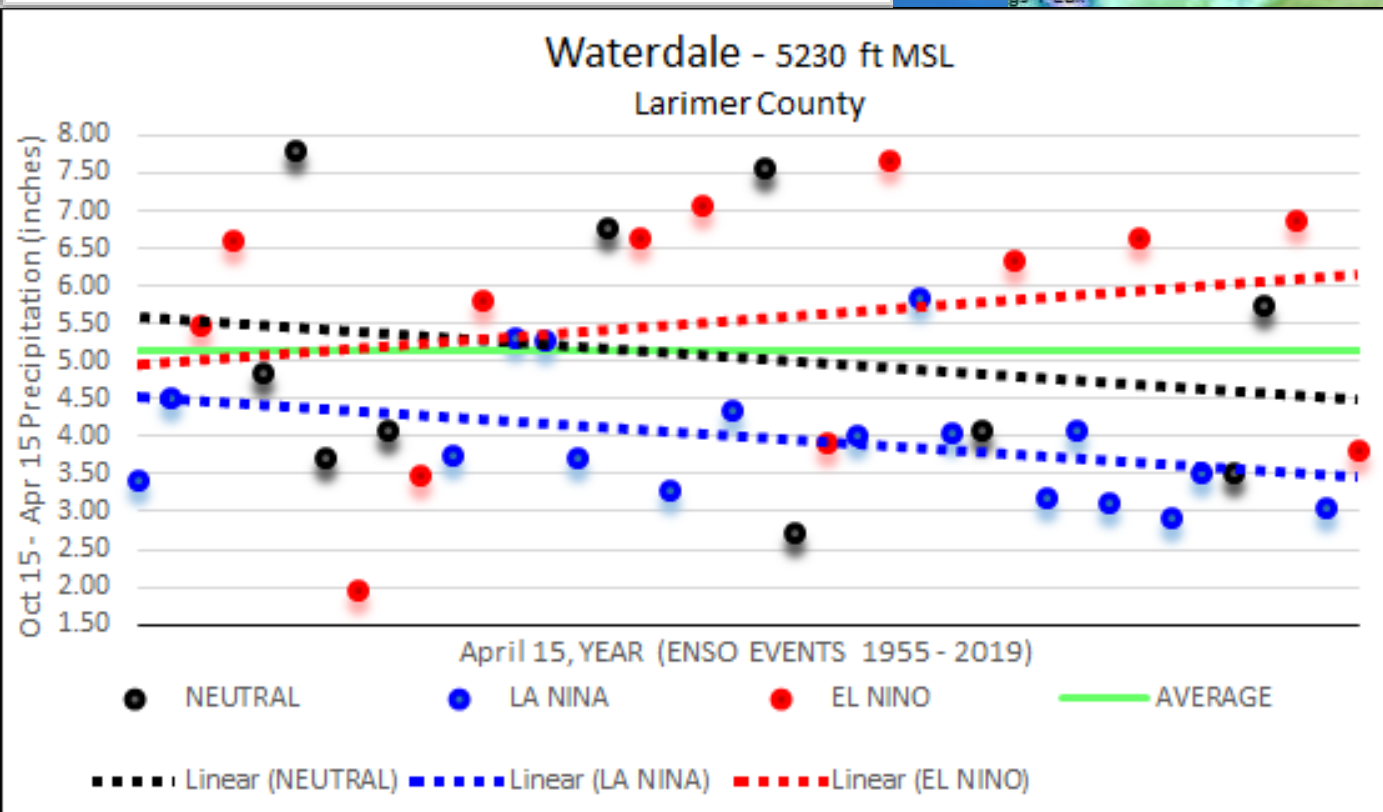


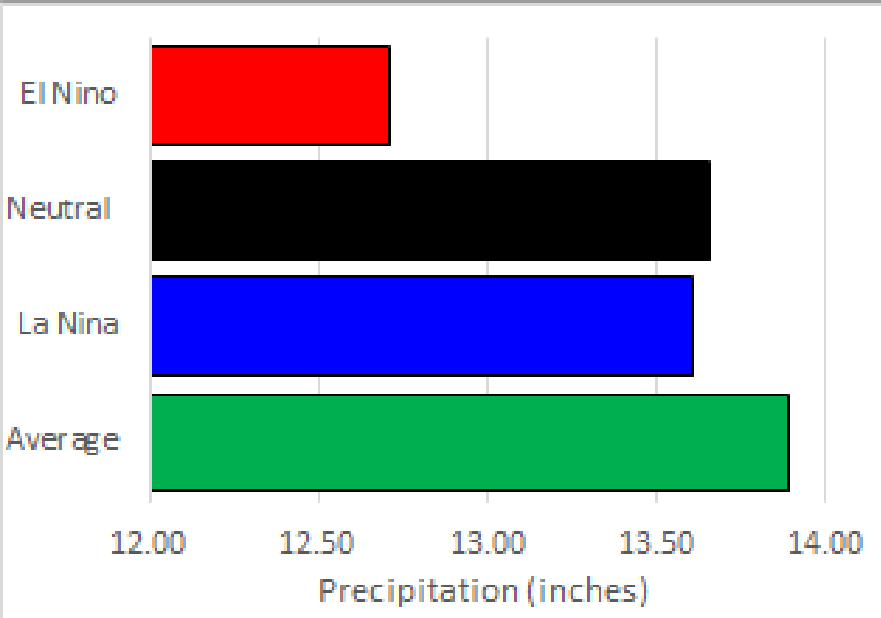
Walden





Waterdale





Winter Park

